

June

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AMAZING STORIES

June, 1929
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Publishers of SCIENCE & INVENTION, RADIO NEWS,
RADIO LISTENERS' GUIDE, AMAZING
STORIES QUARTERLY, YOUR BODY

JULES VERNE'S TOMBSTONE AT AMIENS
PORTRAYING HIS IMMORTALITY

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Our Cover

This month depicts a scene from the story entitled, "The Beetle Experiment," by Russell Hays, in which the scientist is shown "cornered" by the gigantic tiger beetle, which attained its enormous size through his own experimental efforts.

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In Our Next Issue:

THE BOOK OF WORLDS, by Miles J. Breuer, M.D. This is the third in a series of three stories which Dr. Breuer wrote, according to his own statement, "largely because I did not know what to do with the other two." In the fourth dimension, "The Book of Worlds" easily stands up on its own merit, but the author's statement only increases its interest and should furnish much material for lively discussion.

THE SPACE HERMIT, by E. Edsel Newton. Aviation now, just as radio did a few years ago, "The Space Hermit" is more than a mere fantastic aviation story, though it contains some scientific theories about the outer air, is cleverly written and furnishes much food for thought—and perhaps for experimentation.

THE SUPERPERFECT BRIDE, by Bob Olsen. It is some time since we heard from Bob Olsen and we rather wondered what he received this many hours after our question was answered. He had been hatching a new idea, and we are glad we waited patiently. It is a splendid biological fantasy—with much of which you may not agree. We want your ideas on the subject.

THE GRIM INHERITANCE, by Carl Clausen. It is almost appalling when you consider the deleterious effect a defective gland can have on the well-being and health of an individual. This science gland is particularly interesting, and the author of this story has expertly woven it into a scientific detective story of definite merit.

FUTILITY, by Captain S. P. Meek, U. S. A. The story does not deal with nearly as hopeless a subject as the title suggests. Captain Meek has devised an entirely new method of traveling through space. It is based on a mathematical problem and he invents a machine to help. The ingenuity and simplicity of both the story and the invention are most surprising. Certainly his is a much better method than traveling into the future.

Also, **THE FLYING FOOL**, by David H. Keller, M.D., written in his own individual style, as well known and liked by our readers; and the concluding chapters of **THE DESERT OF ICE**, by Jules Verne, which is a sequel to **THE ENGLISH AT THE NORTH POLE**, both being exceedingly interesting in view of the trip to the North Pole which Sir Wilkins contemplates starting in June.

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JUNE, 1929
No. 3



ARTHUR H. LYNCH, *Editor-in-Chief*

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Editorial and General Offices: 230 Fifth Avenue, New York, N. Y.

Extravagant Fiction Today

Cold Fact To-morrow

THE ROMANCE OF SOME THIN WIRE

By T. O'CONOR SLOANE, Ph.D.

ONE of Faraday's most famous lectures was on the subject of the candle. This seems a very simple topic, but the candle has been the subject of much scientific development. The old-time candles had a wick of loosely twisted cotton. As the candle burned down, the carbonized wick filled up the flame; the candle gave less and less light, and it had to have the end of the wick cut off periodically, so that a special kind of scissors, called snuffers, was always on hand for this operation. Then some ingenious inventor evolved the idea of plaiting the wick, so that as the candle burned, the end of the wick bent over, and also burned off as it entered the air, emerging from the flame, and the candle became a self-snuffing one. Snuffers became a "museum piece." Then the ash of the wick was rather voluminous. So to get rid of this, the practice was adopted of charging the wick with borax. This melted in the heat of the candle flame, and combined with the ash, fusing with them into many little beads or spheres, which fell down into the wax and did no harm.

The old-time lamp with the solid wick was very snoky and unsatisfactory. The flat wick and the hollow cylindrical wick, with central draft of air, the latter the invention of Anne Argand, along with the discovery of petroleum, represent a series of improvements whose magnitude and importance cannot well be exaggerated.

But our subject is wire. For no improvement in the art of artificial illumination can compare in importance with what this wire has done. At the beginning of the last century the electric arc-light was discovered. It was without practical value, because there were no adequate sources of electricity to supply it. The inventions of depolarizing batteries by Grove, and then by Bunsen brought it a little nearer practical use, and when the dynamo was developed, giving a mechanical source of electrical power for the electric lamp, the problem was in great part solved.

Then the great cry was for subdivision of the electric light and this subject perpetually came up in the scientific and daily press. It is curious to look back and recall how the cry came from all directions. Thomas A. Edison took up the problem and invented the platinum wire lamp. It was so constructed that the circuit was broken when the wire got too hot and was closed when it was cooled a little. It was a most ingenious conception. The idea was that the openings and closings of the circuit should be of extremely short duration, and of such high frequency that there would be no flickering. But it was desirable to get rid of all mechanism, so the inventors started on the search for a wire or filament that wouldn't melt, for platinum was far too fusible for the purpose. And the only thing that could be found was a rod or a filament of carbon. All sorts of curious experiments were tried with little rods and with filaments of carbon. Some attempted to fill with nitrogen

gas a glass receptacle containing a rod of carbon, so that when the carbon was ignited it would not burn. Others employed a vacuum, and soon the exhausted bulb of the electric incandescent lamp with its hairpin-like filament was produced.

A real romance could be written on this subject. And what was the result of it all? It was the perfected carbon filament lamp. They were made in great quantities in lamp factories, and eight or ten of these lamps, giving a bare sixteen candles of illumination each, required a full horsepower to operate.

We have alluded to the romance of the thing, but the engineer sees little romance in the inefficiency of the carbon filament lamp.

Some generations ago miners in Europe found a heavy mineral which presumably bothered them more or less. The Germans called it wolfram, which has been rather inadequately translated as wolf's foam, and the Swedes called it tungsten, which means heavy stone, and it certainly is a very heavy stone. There was no idea that it would be of any use and it remained a waste product for a long time, but as with many other things in this world, some minor uses were found for it. The characteristic substance in this mineral was a metal, and this metal required an enormous heat to fuse and in general terms, was so intractable, that nothing could be done with it except in alloys, such as high speed steel.

But a very few years ago a process was found for working this metal and drawing from it an extremely fine wire. This wire is the subject of our romance. When the electrical engineer carried out the great achievement of drawing a thin wire of metallic tungsten, electric lighting by this single development was revolutionized. It is a true wonder tale of science. Taken in all its effects and meanings, it makes as good a romance as any story of Jules Verne or of Edgar Allan Poe. Tungsten wire was substituted for carbon filaments in the lamps and at once the cost for lighting was cut down to about one-third or one-quarter of the old figure. The manufacture of the lamps in some ways was greatly simplified. Next, by introducing a little argon, the rare gas of the air, into the bulb, the filament could be exposed to a very high heat, without discoloring the glass. People were no longer content with 16 candle-power lamps. Now they want from twenty-five to sixty candle-power in a single lamp for home use. The arc-lamp is less and less used as time goes by, for tungsten wire incandescent lamps can be made to rival it in power. To return to the carbon filament lamp would be a true misfortune.

In old times a sort of opprobrious name was applied to the rather dim carbon filament of the old-time lamp. It was called the red-hot hairpin. But we have substituted for the red-hot hairpin an almost invisible wire of white-hot tungsten, and the private house may be said to have the equivalent of daylight as long as the current is supplied to the tungsten wire in the electric light bulbs.

The RADIO TELESCOPE

By Stanton A. Coblenz

Author of: "The Sunken World," "The Gas-Weed," etc.



PROFESSOR HERMAN VOGEL, of the Observatory of Mt. Topeka, was not the person of whom one would have expected any extraordinary discovery in the field of science. A thin little wisp of a man, slow of speech, slow of movement, with a steady but none too vivid light in his mild blue eyes, he was one who might have been suspected of cold and meticulous reasoning and calculation, but never of any brilliant flash of creation. And, indeed, for the first sixty-five years of his life, he took his way placidly and methodically among his classes at the University and at the eye-piece of Mt. Topeka's seventy-two-inch refractor, recording his observations, making his computations, and apparently content to be able to chart the orbit of an occasional new telescopic comet or to list the tenth magnitude stars in the constellation of Pegasus or of Sagittarius.

Even among those of us who knew him closely, he had the reputation of being "dry as dust." There were no high lights in his actions or his conversation; he seemed always to move about the rooms of the observatory by schedule, and to work by routine; his lean and grizzled face, featured by shreds of white whiskers and by a hairless pate, had rarely been known to wear a smile. Stooping slightly, and always with some ponderous tone beneath his arm, he had been for years a familiar figure about the observatory, even before his appointment as Director; yet he was rarely seen to talk with any one; he was said to have few friends and no intimates; and it was rumored that some misfortune in youth had soured his disposition and made of him a misanthrope and a virtual recluse.

It was accordingly with no great pleasure that I found myself appointed first assistant to Professor Vogel. Having just received my Doctor's degree following publication of my thesis on "Spectroscopic Characteristics of the Annular Nebulae," I had been looking forward to some promising appointment; but little did I expect that Professor Vogel, one of my instructors of a few years before, would single me out for the honor of being his right-hand man. And little did I anticipate that, having accepted the honor, since no rival opportunities appeared, I should have to revise all my views regarding the Professor and to hail him as one of the foremost inventive geniuses of all time.

From the moment that I entered Vogel's employ, I was aware that there was something secretive, almost

furtive about the man. More than once, throwing open the door of the little laboratory behind his office, I found him absorbed amid a tangle of wires and batteries that I thought a most unusual outfit for an astronomer; and on each occasion, roused by my entry, he would spring up angrily, point a lean finger warningly at me, and command, "Go—go, Mr. Vincent! I—I do not want you here!" And it seemed to me that he would stand above the confused mechanical mass almost defensively, raising shielding hands to screen it from my view; and the small grave eyes, contracted beneath beetling brows, would stare at me in resentment mingled vaguely with dismay.

For several months this continued. Sometimes, behind the closed doors, I heard the Professor muttering and chuckling to himself; once or twice I caught glimpses of huge sheets of notepaper, covered with mathematical symbols; now and then I observed that he received heavy sealed packages, which were addressed to him by a well known firm of electrical manufacturers, and with which he tottered off gleefully into his laboratory. I did not think much of all this at the time, for I was coming to believe that Vogel was entering upon his dotage; but what I did note especially was, that he was rarely to be seen now at the eye-piece of the telescope and that his former computations and observations did not appear to interest him.

ONE evening, returning shortly before sundown from a stroll along the mountain, I found the professor in a state of great excitement. He was pacing back and forth, back and forth, like a madman; his blue eyes quivered with an intensity of life I had never observed in them before; his cheeks, normally pallid, appeared strangely flushed and heated; while his bloodless hands, jerking nervously through the air, reminded me of the hands of an hysterical patient.

"Professor—Professor—

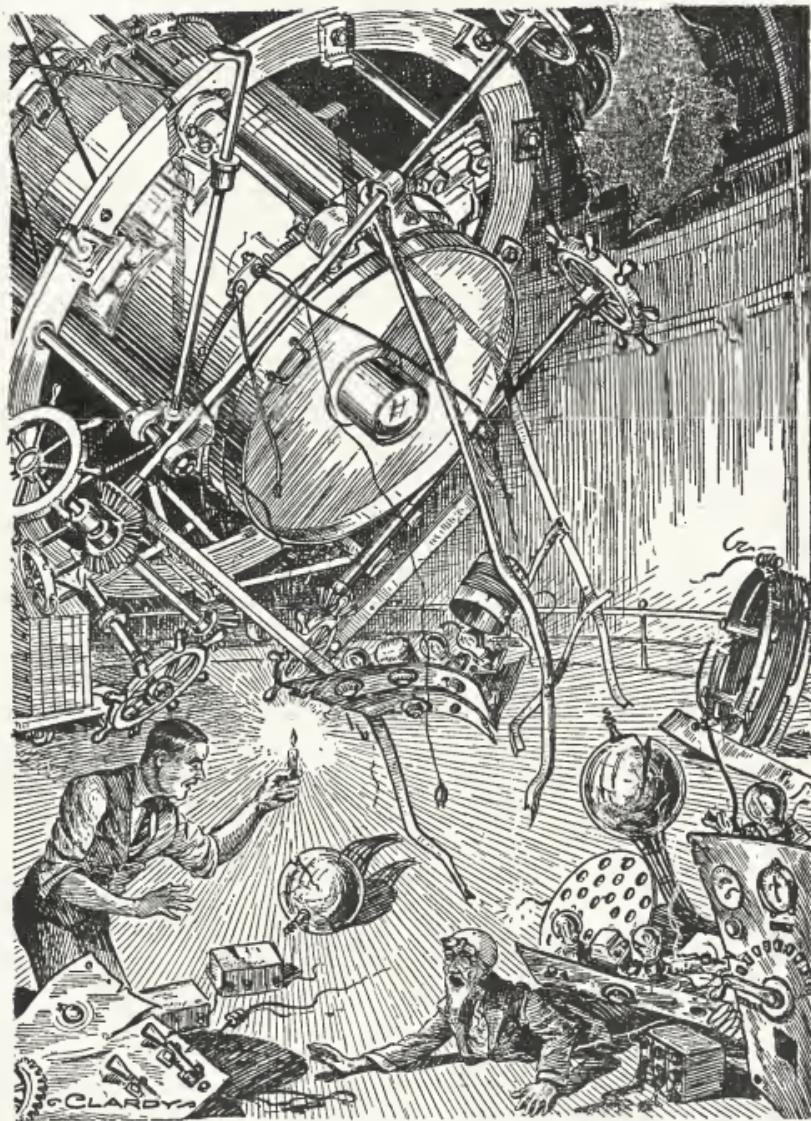
what has happened—" I gasped.

In bewilderment, I halted. He turned toward me, surprised; the brilliance in his eyes betrayed not grief or despair, but joy.

"I have been waiting for you, Vincent! I have been waiting!" he exclaimed. "You can help me. Together we can begin—"

"Begin? Begin what?" I ejaculated.

He stared at me as though astonished at this question. "You shall see," he stated, abruptly. "You shall see. Just do as I tell you—and you shall certainly



A groan from amid the wreckage made my twitching fingers make haste, and in another moment I had lighted a candle. I found Vogel sprawled on the floor, his face ghastly, his eyes blank and terrible and he seemed to be in a delirium.

see." And, without another word, he turned and strode toward his laboratory.

Speechlessly I followed. I was now fully convinced that Vogel was out of his head; but I considered it best to humor his whims.

Reaching the laboratory, he pointed toward the wires and batteries, which, with an intricacy of levers, knobs, and shining steel wheels, almost filled the room.

"For two years I have been working at this," confided the Professor, in tones faintly marked with pride. "For two long years I have thought of nothing else. Now at last it is finished. All that remains is to adjust it. Then we will take the world by surprise. What do you say?"

And he rubbed his scrawny hands together in gleeful satisfaction.

"But, Professor, I do not understand," I broke out, impatiently. "What is it all about? What will take the world by surprise?"

Sparks of anger shot from the small blue eyes. "God in heaven, can't you wait to find out?" he demanded. And he waved a frail fist tremblingly in air. "Just do as I tell you! You'll learn soon enough! Now let's get to work!"

I realized that it would be futile to argue. And so I stood my ground, and quietly waited for directions.

Those directions, when they came, filled me with amazement. Segment by segment, with painstaking care, I had to remove the apparatus from the laboratory; segment by segment I had to attach it to the seventy-two-inch refractor. What could be the meaning? Was I obeying the whims of a crazy man? Yet I had little choice except to obey; like a taskmaster, the Professor stood over me, giving explicit directions as to how to adjust each wire, where to place each part; and all the while his eyes gleamed with an eager, expectant light, a brilliance and an animation not to be expected in the plodding Vogel whom I thought I had known.

I confess that I could not make head or tail of what I was doing; I was like a scribe who copies the characters of some language he cannot read. Had it not been that Vogel hounded me so insistently, that his anger flashed forth whenever I violated his minutest directions, I should certainly never have finished the work. To attach such intricate electrical appliances to a telescope seemed to me the last word in folly; and, as I labored, my mind was busy with schemes for gaining another appointment.

For three days I toiled under Vogel's command. And, for three days, the Professor persisted in his silence. Usually, when I expressed doubts as to the nature of my work, his face would turn instantly red; the most he vouchsafed was when, in a burst of confidence, he once declared, "You will learn in time. It is better you should wait. You will thank me for letting you wait."

The result of which, naturally, was that I became more impatient and curious than ever.

If the other helpers in the observatory wondered to see the queer contrivance with which Vogel was disfiguring the telescope, they let no word of their whis-

perings reach me. Possibly they realized that it would be dangerous to comment aloud—for was not Vogel master here? At all events, we succeeded in finishing our task undisturbed; and at length the time arrived for that test which was to revolutionize his life and my views of the universe.

I observed that his appliances, when complete, assumed the shape of a gigantic radio receiving mechanism, which was fastened to the great refractor by numerous thin wires. But it did not occur to me that the resemblance could be more than casual; and as yet I had no intimation of the nature of the discovery that Vogel was exploiting.

HIS excitement, on the evening when I screwed down the final bolt and adjusted the final bulb, was so great that one would never have recognized him as the plodding, methodical Vogel, whose name had become synonymous with all things lifeless and dull. What depths, what fires now animated those living blue eyes!—what intensity of purpose flamed from that gaunt, shrivelled face and flashed radiantly across the pale cheeks and furrowed brow! I looked upon a man totally transfigured; and as I watched his slim fingers deftly manipulating the mechanism of the telescope, it seemed to me as if he had suddenly thrust aside the mask of forty years and stood before me revivified and young.

"Just a minute, and we shall see! We shall see!" he exclaimed, with the enthusiasm of a youth making his first experiment. "We shall see if it works!"

And then, turning upon me a smile of the utmost, burning assurance, he asserted, "But it cannot help working!"

I stood regarding him without a word, wondering if he were about to demonstrate himself to be a madman or a genius.

For some minutes he continued working over the instrument with flashing fingers; then, his features still glowing as with an inner light, he announced, "Now, now is the time!"

And eagerly he glanced through the eye-piece of the telescope.

For a long, long minute he stared into the heavens. As I watched him, I wondered why he, to whom a telescope was as familiar as an axe to a woodman or a knife to a surgeon, should be peering upward with that intent, curious air, like a child permitted its first peep at the stars. And I was puzzled to know why, after the first few seconds, the light seemed gradually to be drained from his face; and why those deep, dark furrows suddenly appeared.

It was with a baffled air that he at length turned to me. "I don't seem to get it quite right!" he muttered, in obvious distress. "I'll have to try again!"

And once more, while I smiled grimly at the failure of his experiment, he returned to the eye-piece.

An interminable period went by. Patiently, yet with a worried expression that deepened moment by moment, he shifted the mechanism; altered the telescope's focus; altered it again, ever so slightly; altered it yet again, more slightly still; peered out into the blackness of the

night as though expecting to read there some dark and elusive secret. What purpose was stirring beneath that wrinkled, anxious brow? I could not guess; but as the dreary moments dragged away, I began to feel vaguely resentful at the part he had forced me to play in this fiasco.

Suddenly, from the radio-like instrument beneath the telescope, the sparks began to leap and sizzle with a vivid blue light. "Ah!" exclaimed the Professor. "Now what is wrong?" And while his fingers rapidly pulled at an electric switch, his eyes returned once more to the telescope.

The next moment he burst into a shout that confirmed my fears for his sanity. It was a fierce, exultant shout, such as Columbus may have uttered upon sighting the New World; there was such joy in it, and such abandon, that I suspected Vogel of some maniacal delusion.

"What is it, Professor?" I demanded, rushing over to him. "What is it you see?"

He did not appear to hear me. With a rapt interest, while the blue sparks still leapt and flashed, he was staring through the telescope. The tormented, disappointed expression had left him; his whole face was a flame of wonder and delight, which seemed only to increase as the moments went by.

"Professor, what has happened? What do you see?" I flung at him again, excited in spite of myself.

An involuntary exclamation of joy, such as one may utter unconsciously at the height of rapture, came as his only answer.

And the conviction that he was out of his mind returned to me with redoubled force.

Another long interval went by; still, with an absorbed, ecstatic look, he peered and peered into the heavens. I was just about to slip from the room and leave him to pursue his vagaries in private, when suddenly he became aware once more of my existence.

"Vincent," he exclaimed, turning toward me with the air of one who has been treading upon clouds. "It works! It works perfectly! This is an historic day—yes, Vincent, an historic day! Come, want to see for yourself?"

I certainly did want to see for myself. Though still convinced that he was suffering from delusions, I found something contagious in his enthusiasm.

Without delay, I turned to the telescope. But at first it showed me only what I had anticipated; the night-skies spread before me as countless times before. A hundred thousand points of lights, packed together as closely as grains of sand on a beach, lay strewn amid the coal blackness, with here and there a slender wisp of luminescence that denoted a nebula. All was precisely as it should have been—what was it that had so strangely stirred the Professor?

I was about to withdraw my eyes, when Vogel began to rattle a switch to my rear; and once more I heard the hissing of the blue sparks. At the same instant, the myriad glittering points of light flashed from my vision like letters from a motion picture screen—and immediately were replaced by that which made me stare and stare in incredulous amazement.

My sensations at that supreme moment are impossible to describe. Imagine that one were to be standing at the corner of one's own familiar street—and that suddenly, in place of the well known gardens and brick walls, one saw a golden ocean in which purple mermaids dipped. Or imagine that one were gazing at a flower, one of the commonplace dandelions or daisies one had seen all one's life—and that inexplicably the petals vanished, giving way to a multitude of angels that rose with gleaming faces and glimmering wings. Incredible! one will protest—yet such experiences would be no stranger, and could stab one with no greater astonishment, than did my actual experience with Vogel's telescope.

FOR a long while I wondered whether it was not I, rather than Vogel, that was the victim of an illusion. Where the stars should have been, a broad plain had suddenly opened to view! I was gaping at a fantastic wilderness, lovelier by far and stranger than any I had ever imagined! It was covered by a tall, frond-like vegetation, capped with long tassels and streamers that waved and twirled gracefully in the wind. All were of the most curious coloration conceivable—not of any hue that one could exactly define, but rather of a blending of hues, green and yellow, orange and red, violet and azure; and the colors with the changeability of rainbowed water, seemed to be shifting constantly, passing in shimmering waves up the great tendrils and spires of the vegetation, so that now a stalk would be flaming crimson, now a cerulean blue, now daintily opalescent, now crystal-clear and transparent, and now as white and glittering as new-fallen snow.

While I stared in amazement, in bewilderment, in rapture at this unearthly scene, my gaze traveled questioningly to the skies above the plain. They were brilliant with light, yet were faintly pink, like misty heavens at sunset; and they were shot through with streaks of green and gold, delicate as the veinings in marble. Almost at the zenith, in a dazzle of radiance oppressive to the eyes, glared a sun of the hue of red-hot iron, ten times as large as the full moon; while at opposite points of the horizon blazed smaller suns, one of the tint of sapphire and one intensely white and vivid as an arc-light. And here and there throughout the heavens, staring like ghosts with pallid outlines barely distinguishable, peered the rounded outlines of other orbs large and small, timid moons almost lost amid the luster of their blinding neighbors.

At first, gazing at these weird objects, I was as one dazed, as one in a dream. Then gradually, as some semblance of reason returned, I came to believe that I was prey to an hallucination. They could not be real, these fantastic scenes! Yet they seemed real as the very walls about me! And by degrees, as I gaped and wondered, a possible explanation occurred to me, so incredible that I cast it scornfully aside, yet so well fitted to the facts that I embraced it again! Certainly, this was not the earth that I beheld!—I was gazing at the surface of some other planet!

My reveries were cut short by an impatient voice. "Come, come, Vincent, don't sit dreaming there all

night!" the Professor grumbled. "Let me take another peep!" And, with an eagerness not to be controlled, he pushed me, almost pulled me aside, and took his place at the eye-piece. . . .

"Well, what do you think of it, Vincent?" he demanded a few minutes later, his face illuminated as by some overwhelming happiness. "What do you think of it now? How do you like my radio-telescope?"

"Radio-telescope?" I gasped.

"Yes, of course. What do you suppose it is?" And he stood regarding me with a half-humorous smile, as one might regard a child who asks some preposterous question.

"We have been gazing at a planet revolving about the triple star 198 Cygni," he continued, after a silence. "We have seen what no human being has ever seen before. We have been using a telescope of a million million times the ordinary power."

"A million million times?" I could only echo, in stupid amazement.

"Yes, at least that, by a modest computation. You see, a new principle is involved."

The Professor's face glowed with pride, and his blue eyes sparkled sagaciously as he warmed to his subject.

"I have been applying the laws of radio transmission. Every illuminated object, as you know, emits rays which travel out everlasting through space, and which, though attenuated indefinitely, are never lost. The possibility of their recapture was recently demonstrated on a smaller scale by television—and also by photographs sent by wireless. Each point of light in the universe, one might say, is at all times a transmitting apparatus for such impressions; what is ordinarily lacking is a receiving apparatus. This I have now supplied in two ways: first, by our seventy-two-inch refractor, which enormously expands the illumination; secondly, by a radio contrivance, operating on the same principle as radio photography, which is capable of magnifying almost indefinitely those rays caught and already magnified by the telescope—"

In this vein the Professor continued for many minutes, while I listened as best I could, unable to follow all that he said, yet filled with a new admiration for the range and profundity of his mind.

"Professor, you have immortalized yourself!" I exclaimed, when he had finished. "You have made the discovery of the age! When will you give your creation to the world?"

He smiled the modest smile of one who realizes that he has done great things, but does not wish to take unnecessary credit. "We will wait just a bit yet," he said. "There are still some tests to be made, and some minor adjustments to be arranged. You are the only one who shares in the secret as yet; and I must ask you to let the matter go no further until you have my permission."

I thanked him for his confidence in me, and promised to do as he requested.

THE rest of that night we passed in company with the telescope. Not a particle of sleep did either of

us secure; and not a particle of sleep did we desire. Certainly, of all the nights which either of us had passed, this was the strangest, the most exciting, the most packed with fascination and delight!—neither of us was able to restrain his impatience, his wonder, his joy as we took turns at the telescope and gazed up at the weirdest and most lovely and unimaginable scenes that human eye has ever beheld. I have never ceased to regret that I did not note down all that I saw, but my agitation was too great; still, there is much that I remember, for who could view the spectacles that I viewed without being haunted by them till one's dying day?

Out of the glimpses which we had of the tempestuous rims of suns, of the gray craters of worn-out worlds, of the seas of fiery new-born planets, there are several scenes that recur and recur to me by day and in my dreams. I recall, for example, the flaming satellite revolving amid the star-cluster, its skies ablaze with a thousand suns, red and blue, white and golden and yellow, some scarcely more than glaring points of light, some huge and rounded, monstrous radiant balls too dazzling to behold. I remember, likewise, the world wandering amid the mists of a nebula, its heavens lighted by no sun, yet softly and eerily luminous from horizon to horizon, as though lanterned by moonbeams without the presence of a moon. I have recollections, again, of a ruddy firmament with a three-tailed comet, which reached from the zenith halfway to the waves of a carmine sea; I have also recollections of skies from which meteors leapt and shot in unceasing streams like rockets. But most clearly of all I see again the living things—the creatures like animated globes rolling amid the purple meadow brush; the red-fanged beings, with dinosaur heads and elephantine bodies, which waded deep in the steaming brown vegetation; the bat-like flying animals, with blue eyes that seemed almost human, and long waving tresses like a woman's hair; the translucent soaring shapes, whose butterfly wings had the spread of a condor's, and whose motion seemed to be the rhythm of some airy dance.

How little, while I gazed fascinated at that unearthly sight, did I realize that to-night's glimpse was to be almost my last! How little did I anticipate that I was to have only one or two more peeps at the heavens, before Vogel's discovery was crowned with tragedy and terror!

With the coming of morning, I dragged myself wearily yet reluctantly away from the telescope; and, with dizzy brain a-whirl, flung myself down for a few hours' sleep. How enthusiastically I kept telling myself that I had shared in the greatest invention of the ages!—that now the very doorway of the heavens had been broken down, and the last mystery of creation stood open before the gaze of men!

IT was with feverish anticipation that I returned that evening to the telescope. Though I was early, Vogel had preceded me; and the flush on his face and the gleam in his bloodshot eyes showed me that his ardor had not waned. At first he seemed unaware of my entry, so absorbed was he in staring starward; and I

had to call his name several times, before, with a start as of a dreamer awakening, he deserted the eye-piece momentarily and turned to me.

"Vincent," he exclaimed, speaking like one in a daze, "I have been seeing a magnificent scene! No, magnificent is not the word—it is too ethereal for our poor human expression. It is something more lovely than flowers or music—something I have dreamt of, but have never imagined could be real. Only, it is more beautiful than any dreams."

"What can it be?" I asked; and paused, waiting for his reply. But no reply came; once more he was peering through the telescope, his worn face transfigured with a look at once yearning and beatific, a look absorbed, eager, passionate, like the look of the prophet or the saint in the hour of utmost devotion.

"What do you see, Professor?" I inquired, curiously. "What do you see?" But he did not seem to hear. And it was long before he turned to me again, his eyes gentle with the faraway light of one who has seen a vision.

"I have never believed in Heaven, Vincent," he murmured, as though more to himself than to me. "But I am sure I have seen it at last." And he sighed softly and happily.

I did not wait to be invited, but took my place at the telescope. And it was not many seconds before I too felt that I had looked upon Paradise.

Some of the sights of yesterday had been strange and beautiful, but none half so beautiful as this. My gaze fell upon a scene less fantastic than the others, less remote-looking and more familiar—but how exquisite, how perfect, how utterly pleasing to the mind and senses! The blue sky might have been the sky of earth, though there was in it an intensity of color and a translucency, not often seen on our planet; the vegetation, too, might have been the vegetation of this world, though only of some specially favored region, for there was a tropic lushest about the tall dense trees with their yellow-green foliage and their palm-like fans; and the blue scarlet flowers, lavishly scattered about a wide round glade, bloomed with a prodigality to be found only in warm climes. But this was not what interested me most; nor was my attention most held by the azure stream that rippled across the glade, nor by the indigo pond shining at its further border, like a lovely eye upturned into lovely space; what most attracted me, and what gave to the whole scene the impress of a singular and transcendent beauty, were the creatures that flashed and sported beneath the trees and through the air. They were perhaps twenty in number, though it was impossible to count them; they were shaped like women, or rather like young sylphs or Dianas, and were clad in diaphanous robes that scarcely concealed their graceful forms, and that gleamed and glimmered in the light of a golden sun. They were all in constant motion, wheeling and tripping and soaring about, for between the shoulders of each there grew two pairs of wings, transparent as those of a dragonfly and vividly iridescent; and as they swung and capered about, sometimes high in air, sometimes racing along the ground, sometimes floating among the

branches of the trees, it seemed to me that they were executing some sublime and inimitable dance whose every gesture was music.

I do not know how long I watched them; I could have watched all night as they skipped and frolicked round and round, with agile and harmonious movements that seemed never to tire. . . .

Vogel's voice, impatient and eager, had rung in my ears and rung again and yet again before I awakened from my reverie and reluctantly surrendered my place. Supplanting me at the telescope, the Professor seemed even more absorbed than before, seemed bent upon observing till he dropped from exhaustion—I could not urge him away from the eye-glass, and hours passed before he would permit me another glimpse.

But his words, spoken rapturously and without regard to my presence, served now and then as a distraction during the long interval of waiting. "See! They are resting now!" He would exclaim. "What a lovely circle of them there among the flowers! How like flowers themselves! What large limpid eyes! What glowing features, like the features of fairies! Or like angels! Not like any mortal women! I have always dreamt of such as they! I have been waiting, waiting these many long years! But I have never met them before! Now I am old and gray—how strange to see them at last! Look! around them is all the beauty I have longed for—the beauty that is the truth of life! Oh, that I might fly straight to them!"

Were these the words of the sober, matter-of-fact Vogel that I thought I had known? Or had some alien spirit entered him, some outside force controlled his tongue? He spoke rapidly, ecstatically, and in low gentle tones, like one who communes with himself on some night of lonely vision; while his face that burned and quivered with emotion had again lost the harsh, bleak lines of years and taken on something of the softness and the wonder and the aspiration of youth.

A MOMENT'S glimpse at the heavens was all that he would allow me for the rest of that night—a glimpse which showed me the glimmering winged creatures flitting about the glade precisely as before. At last I withdrew, leaving him still in a transport, though expecting that by the following day he would have recovered. Not so, however!—when morning came he wandered about the observatory like one in a dream; and that evening he returned early to the telescope, where he repeated his curious behavior of the night before.

This time he seemed even more preoccupied—not one peep at the skies would he permit me. He was as one possessed by some ethereal frenzy; he appeared to drink in and drink in and drink in with his eyes some divine elixir, that held him entranced and captive. Yet not once did he shift the focus of the telescope; his rapture-stricken exclamations, wilder and more fervent than before, showed that he was peering again at the glade of the dancers. "They are still there! They are still there!" he would cry, forgetful of my existence. "Oh, that I might join them! Oh, that I might dwell with them forever!"

Then, from between the thin, trembling lips, a sigh would escape. "They are so far away! So many light years away!" And the gray head would sag and droop; and the withered features would take on a look of yearning melancholy. Yet, after a moment, the ecstatic expression would return, and he would again gaze ravenously into the night.

"But, Professor, why not make some other observations?" I would demand. "There are so many other things to be seen!"

He would not appear to hear me; or, at most, a momentary frown would pucker his face, and he would wave his hand at me impatiently, as if bidding me not to annoy him. And he would favor me not even with a grunt in reply.

Night after night it was the same. Night after night he clung to his instrument intently, avidly, jealously, no longer permitting me a glimpse, no longer interested in more than one point in the heavens. I was now convinced that, genius although he undoubtedly was, he was also a monomaniac. It was useless to plead with him, useless to argue, to implore—worse than useless to demand why, having made it possible to explore the universe, he must limit his gaze to a single dot amid immensity. He was immune to my appeals, immune to all voices from this world; he lived in his dreams and at the telescope; when he spoke, it was in a far-away, abstracted manner, like one who talks in his sleep: when he moved about the observatory, his features shone with a luster that seemed not of this earth, and his eyes, softly burning, appeared to start at some wonder beyond the walls that bound him. . . .

"They are more beautiful than ever! More beautiful! How much more beautiful!" I would hear him panting in ecstasy, during one of his long sessions at the telescope. "Oh, that I might be near to them, might speak to them!"

Though I was now convinced that his madness had taken a serious turn, there was nothing I could do to restore his wits.

I knew that things could not go on like this forever. But I could not foresee how they were to end. I had one or two warning hints, however—first of all, on that occasion when the telescope had shifted its focus by possibly a thousandth of a hair's breadth and he had lost the glade of the dancers and searched for it during an entire night. I shall never forget his distracted expression as he adjusted and readjusted the instrument, exploring half the surface of the planet; from the grief and torment in his manner, I believe he would have been ready for nothing short of suicide had his quest not finally succeeded.

A few nights later, he again showed the extent of his mania. "Gone! Gone! All gone!" I heard him groaning, in tones of deepest sorrow. "The dancers are all gone!—I do not know where!" He was disconsolate; there was nothing I could say to comfort him; he kept murmuring mournfully to himself, "They were so lovely—so lovely! And she—she of the gold-tipped wings—she was the loveliest of all! Where—where has she gone?"

Not many minutes afterwards, the airy troop returned

to the glade—and his face brightened like that of a lost child who has found its home.

But he had unwittingly revealed a secret. Was it possible that, worn and gray as he was, he had fallen in love? Was it possible that he had singled out one of the dancers as the object of his devotion? On succeeding nights, his exclamations confirmed my surmise; he kept referring over and over again to "the gold-tipped one, the gold-tipped one," in tones of such ardor, that one might have imagined him to be a twenty-year-old boy paying tribute to his first loved one.

He now seemed lost beyond possibility of rescue. Worst of all, the secret of his discovery seemed lost. I begged him to give his invention to the world; I begged him to reveal the formula at least to me; but he met me with impatience and anger. As soon reason with an opium fiend—thoughts of "the gold-tipped one, the gold-tipped one" consumed him completely; he was happy only in whispering to himself about her sea-blue eyes, her gleaming rainbow hair.

Things at length came to such a pass that I seriously contemplated breaking my promise and revealing his discovery. I even had thoughts of instituting a private inquiry as to his sanity—when unexpectedly something happened which ruined his plans and mine, and made of our hopes but a mockery and a dismal remembrance.

LATE one night, while I was conducting some spectroscopic observations in a secluded chamber, Vogel came to me in a state of intense agitation. His eyes, bulging and inflamed, had a look of dread and horror; his tense features twitched in uncontrollable spasms.

"Vincent!" he exclaimed, breathlessly. "Vincent, come!—look!" And his left hand grasped convulsively at his heart, while he stood panting above me, unable to gasp out another word.

I arose, not without apprehension. "Calm yourself, Professor," I urged. "In heaven's name, what has happened?"

He seemed unable to restrain his excitement, "Come!—look!—see for yourself!" he blurted out, with a shocked and sorrowful expression. "I don't know—I don't know what—it is dreadful—unthinkable—"

These incoherent babblings might have seemed final proof of Vogel's unbalance. But there was in them an intensity of emotion indicating that something really was seriously amiss.

Without another word, I hastened out of the room with him. What aid he expected of me I did not know; perhaps he was merely turning to me blindly in his trouble.

Pushing ahead of me impatiently, he fairly leapt to the eye-piece of the telescope. He took a single peep through the instrument, then groaned in dismay. "Yes, yes, they are still there! Still there! They will destroy everything—everything!"

"What is there?" I demanded. "What will destroy everything? Come, let me see!"

With a sigh, he yielded me his place.

"Isn't it terrible, Vincent—terrible, terrible?" he almost wept, as I glanced once more heavenward.

At the first glimpse, I had the impression that Vogel had been deluding himself. I saw again the flowered glade, with the green-yellow palm-like vegetation; I saw the golden sunlight streaming down upon the shimmering dancers. "What is wrong?" I inquired; then, in an instant, I regretted my words, for I could see for myself that there was sufficient cause for anxiety.

Along the dense foliage of the treetops, not many hundred yards from the glade, there crept a band of creatures as hideous as the dancers were fair. It seemed impossible to believe that they and the frolicking maidens could breathe the air of the same world; yet they too were human in form; or, rather, were partly human, for their shapes were less those of men than of gigantic apes. Their bodies, glossy and black, were clothed in tight-fitting garments that revealed the billowing muscles beneath; their hands clung tenaciously to the boughs, and their bare feet, with the prehensile toes, afforded them a hold on many a precarious perch. But the thing that struck me most was their dark and bull-shaped heads, with the tiny wicked red eyes; while the powerful jaws, with the long rows of saw-teeth, were horrible as the jaws of sharks. Each creature held a slender metallic club in his hands or between his teeth; and each was stealing forward slyly, cautiously, step by step, inch by inch, with thick neck straining toward the glade, and eyes earnest and alert as those of a leopard stalking its prey.

Instantly it occurred to me that they were indeed stalking their prey. And I groaned as the truth flashed upon me—these monsters were carnivorous and were hunting the lovely dancing things! Before long they would spring, and rend them to bits!

Was there no way to save the dancers? Still they leapt and swung about the glade, round and round, in a whirling, happy rout, gleaming and flashing in the sunlight, apparently unconscious of the crawling terror amid the treetops.

"There is no way to save them!" moaned Professor Vogel, as if in answer to my thoughts. "There is no way! There is nothing we can do!"

I believed I had seen all that needed to be seen. Shivering as though from a personal peril, I yielded my place at the telescope. And Vogel accepted it eagerly, although his knees were tottering and he had the manner of one distracted.

A minute passed in silence. "They are getting closer!" he lamented, suddenly. "Closer and closer! See how hungrily they open their jaws! It will not be long yet—nothing can stop them! Oh, if we could only warn the dancers in time!"

"Perhaps they will be warned in other ways," I suggested.

"No, they will not! They cannot see what we see!" he returned, wearily. "We are a thousand million miles away, yet they cannot see what we see!"

Another silence. . . . In order to escape the oppression of my own thoughts, I wandered across the room and glanced out through a window. To my surprise, I found that more than half the heavens were starless; only toward the west, whither our telescope was pointed, were the stars still unobscured.

From time to time, against the eastern horizon, a dagger of thin lightning would shoot up, illuminating the jagged tops of the ranges. Flinging open the window, I found a brisk wind blowing; I thought I could hear the rumbling of far-off thunder. And the rack of clouds were edging visibly toward the west.

"What do you see now, Professor?" I demanded, fearful that in a few moments his view would be cut off.

He merely groaned for reply.

I GLANCED out of the window again. A long lance of lightning quivered from the east, wavered, and broke in a dazzling burst. And, ten seconds later, the thunder rapped and clattered sharply.

But Vogel did not seem to hear. "They are getting closer, still closer!" I heard him repeating to himself; and his jaw sagged, and his face, preternaturally white and long, seemed like the face of one awaiting the hangman.

"Look! Look! How greedily their fingers reach out!" he continued, as though to himself. "Fingers hooked like great claws! . . . They are getting nearer the glade! Not twenty yards away! . . . Still those lovely ones dance and dance! The gold-tipped one, the gold-tipped one dances among them!"

And something like a sob issued from between his trembling lips.

As if for reply, there came a vivid white flash. And almost immediately the thunder snarled and growled.

The clouds were sinking lower into the west. Only a round glittering patch, toward which the telescope was pointed, was still unconquered by the storm.

From amid the growing obscurity, the screeching and howling of the wind came to me like demoniac voices wailing. And mingled with that outer tumult, I seemed to hear the plaint of the Professor, "Only a few yards more—a few yards! See! They rise up on their haunches—they prepare to leap, to spring!"

Another blinding flash; the thunder snapped and rattled derisively.

"Can we do nothing?—nothing to save them?" came once more the Professor's desperate appeal.

"They are long, long past all saving!" I exclaimed, struck by a new thought. "The light that you see has been traveling through space for centuries. What you are watching has ended a thousand years ago!"

"A thousand years ago!" he echoed, disconsolately. "Yes, yes, it is true! It has all ended a thousand years ago!"

Then, to the accompaniment of distant thunders, suddenly he shrieked, "Look! See how they prepare to leap, to spring! . . . They are leaping, they are springing! . . . Merciful gods, all, all grows dark!"

He staggered away from the telescope; the heavens were totally obscured. But before I could stride one step toward him or utter a word, there came such a crash that I thought the world was ending. My senses seemed to stop short in one swift fiery tumult; I reeled, was aware that I was tottering, falling. . . .

A few moments later, I picked myself up, still dazed, still uncertain what had happened. All things

were in darkness, except for the fitful flickerings of the retreating storm. I fumbled in my pockets, found a match, and lighted it; and, as I did so, I uttered an involuntary gasp.

Even by that pale wavering flame, I could see how devastatingly the lightning had struck. A twisted mass of batteries, rods and wires, flung haphazard about the floor, were all that was left of Vogel's invention.

A groan from amid the wreckage made my twitching fingers make haste, and in another moment I had lighted a candle. I found Vogel sprawled on the floor, his face ghastly, his eyes blank and terrible. He seemed to be in a delirium; over and over again he kept muttering to himself, "They leap! They spring! Oh, fly, gold-tipped one! Fly, gold-tipped one, fly, fly, fly!"

All the next day, and the days that followed, while he was confined to his bed, he repeated these words incessantly. Specialists from the city, summoned in haste, found that his injuries were not fatal, but reported that he would never see again. Yet the loss of his sight did not seem to grieve him; he merely mumbled

consolingly to himself, "Who says I cannot see? Who says I cannot? I see what no one else ever saw! I watch her there always, the gold-tipped one, in the glade of the sunlit flowers!"

The attendants shrugged and nodded, and pointed significantly to their heads. Only I, however, realized the full extent of the calamity. Hour after hour I pleaded with Vogel to reveal the secret of his invention; but either it had eluded him, or else he was still obsessed with some restraining frenzy. Invariably he would hear me impatiently, and reply, "No, no, I cannot tell! I have seen what no man should see! I would not make others suffer as I have done!"

But the next moment he would seem to grow oblivious to my presence; an ecstatic smile would overspread the gray old face, which would glow beautifully in spite of the deep furrows and the vacant eyes; and gently, almost blissfully, he would murmur, "I see her now! I see her always, the gold-tipped one. I see her dancing with her sisters in the green glade among the stars!"

THE END.

The Cry from the Ether

By Aladra Septama

WHILE it is true that Jupiter is, as far as we can tell, uninhabited and uninhabitable, what assurance have we that there may not be hidden in some area of that gigantic planet not only intelligent life but fairly endurable living conditions—at least for those who have become accustomed to it?

Apparently, running the Beast-Men down to their lair did not solve everything; for in this sequel to "The Beast-Men of Ceres" the author has done some remarkable work. Those of you who have read the first story have an idea of what you can look forward to in the sequel. "The Cry from the Ether" is superior in every respect to the first story, fine as that was. We know you will thank the author, as we have, for so promptly and cleverly following up the adventures and scientific attainments of the Tellurian detectives and the Beast-Men.

This story is published in the Spring Edition of AMAZING STORIES QUARTERLY
Now on sale at all newsstands

The City of Eric

By Quien Sabe

ALTHOUGH a perfected knowledge of successful plastic surgery, and "beyond-the-ero" mechanical devices for the use of the inhabitants of a state or country, might easily make a veritable Utopia, it does seem strange that marvelous inventions in the field of warfare—strange powers for attack and defense—should also be necessary, or that such knowledge should not work for the destruction of a Utopia. However, though a little difficult to conceive, it is quite possible that such a Utopia might exist, and our new author gives us a plausible story of unusual scientific interest that will furnish much food for thought. Next to interplanetary stories and stories of the future, Utopias, when skillfully built, seem to be a great favorite with our readers, and it seems to us rightfully so.

This story easily fills the bill.

This story is published in the Spring Edition of AMAZING STORIES QUARTERLY
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A CORRECTION

In the February issue of AMAZING STORIES we published a story entitled "Mernos" by Henry James. The author tells us that Henry James was merely the name of one of the characters in the story. It should have read as follows:

"Mernos" by L. C. Kellenberger.

The BEETLE EXPERIMENT

By Russell Hays

BEW people ever visit the Filmore museum. It is a musty, gloomy place, occupying the whole second floor of old Marvin Hall; the building itself was long since condemned. Fewer still, notice the one really startling object in the whole collection. It is a beetle placed all alone in a small glass case to the right of the entrance. A gigantic beetle, nearly four inches long, and with pale yellow markings on its metallic grey wing sheaths.

Even then it presents no mystery. Tropical insects often reach such proportions. But, if one be entomologically inclined, he marvels



Once it curled and side-swiped viciously at his arm, its toothed jaws cutting the flesh nearly to the bone.

when he reads the label beneath it, for *Cicindela Cly-*

smene is a local, night-prey-

ing species of tiger beetle,
barely half an inch in
length.

Nor does the matter end
here.

Often of evenings when
a drowsy lulling quiet has

ANOTHER insect story! Yes. This time it is all about tiger beetles. The tale is written and the subject is treated from so entirely different a point than that usually affected in the usual run of insect stories, that we do not hesitate, for one moment, to offer this as a decidedly worthwhile piece of scientification and well worth ten minutes of even a busy man's time.

settled on the campus, an elderly, stooped little man dressed severly in dark blue serge, lets himself into the museum with a pass-key. Glancing furtively about the shadowy room of mammals, he stops before the beetle, with something akin to horror on his thin,

shrunken face. For as long as fifteen minutes at a time he will stand there, running his bony fingers agitatedly through his snow white hair.

"Oh, you devil you! You heartless, bloody devil!" he whispers. The pupils of his mild grey eyes become pinpointed with a look of intense regret, and there settles on his wrinkled face an expression of unbearable anguish.

Should any late visitor chance to enter the museum at such a time, the little man will start guiltily, clutch at his fleshless throat, and flee precipitately from the building.

Inquiry among the students discloses the fact that he is old Asa Stephens, professor of Entomology. Admittedly, he is a little queer. And it is something of a shock to discover that he is still in his early forties. This premature aging is attributed to a nervous breakdown some half dozen years ago. At that time, Asa had achieved considerable national prominence in his chosen field, through his work in determining the functions of insect ganglia or nerve centers.

The strain of the long, irregular hours spent in this research is supposed to have proven too much for him. So far, no one has ever thought to connect the sudden bleaching of his hair with the vampire murders, which so terrorized the little college town at that time.

Some four years before his breakdown, Asa had devised a microscope especially adapted for studying living insects. It was under this instrument that he performed the operations by which he definitely worked out two accessory systems to the ganglionic chain. Following his now famous successes at ganglionic research, he endeavored to locate the ductless glands, corresponding to the thyroid and pituitary in human beings, which controlled the growth and development of insects in the larva stage. Eventually he located them. One, he found to be at the base of the brain, the other was a cream-colored protuberance on the side of the third ganglia.

To prove the functions of these glands, he weakened or destroyed them, thereby stunting the grub and the resultant moth or beetle. While experimenting along these lines, he discovered quite by accident that a weak alkaline solution, notably of a potassium compound, had an irritating effect upon the glands, causing them to grow abnormally.

"Now if that's the case," mused Asa, his grey eyes narrowing contemplatively, "what's going to happen to the grub? Will it grow abnormally, too?"

Happening to have a number of tiger beetle larvae in his laboratory at the time, Asa immediately commenced testing his new theory. All but three of these grubs failed to survive his treatments. These three, as Asa continued to stimulate their endocrine glands by repeated hypodermic injections of alkaline solution, soon grew far beyond the normal size of *Cicindela Clynnene* larvae. They continued to grow! Asa was elated. He envisioned the growth of a giant beetle that would set the whole scientific world to gasping.

However, there was still considerable doubt in his mind as to whether the grubs would pupate normally,

carrying out that wonderful alchemy of nature, whereby ugly, slow moving grubs and caterpillars, build for themselves papery cells and wind cocoons from which they emerge as fully developed beetles and butterflies.

At this time, all three grubs had reached a length of approximately five inches. Asa ceased his injections on two of them and waited impatiently to see what would happen. For a week they went on eating voraciously. Then one day they drew down into their holes in the sandbox by the laboratory window, and commenced to pupate. How long it would take them, Asa had no idea. In the meantime, he continued injecting the remaining grub.

BY the time it had grown to be a foot long it was a huge, malformed slug that hung in the neck of its burrow with only its ugly, dirt-colored head showing. Feeding it had become quite a problem. Asa had to spend more and more time each morning with his net, capturing an increasing number of insects to satisfy the grub's insatiable appetite. Obviously, he could not go on feeding it this way indefinitely. One evening, by way of experiment, he brought home several mice from the zoology department.

"Either you change your diet, or your growing days are over," he informed the malignant-eyes that glared from either side of the oblong, earthy plate set like a trapdoor in the level surface of the sandbox. It seemed to him that a look of cunning understanding came in the baneful eyes.

Taking a mouse from its cage, Asa dropped it in the box. As though warned instinctively, the mouse ran frantically around the sides of the pen, keeping well away from the dark plate near the center. The grub eyed it hungrily, fixedly. Asa made as if to grab at it. The mouse dodged back, racing across the middle of the box. The trapdoor suddenly opened. Asa caught a glimpse of fearful, gleaming shear-like teeth, shooting up from a pale brownish maw. The mouse gave a terrified squeak. Then the hideous trap had snapped shut, and the grub's beady eyes glowed triumphantly, as it dragged its struggling victim down into its den.

"You bloody devil, you!" cried Asa. And because he was really a very meek and timid sort of a person, he felt a cold shiver run down his spine.

As the weeks passed and the grub's appetite continued to grow in direct proportion to its size, Asa gradually shifted its diet to bits of raw beef. To avoid inquisitiveness on the part of the local butchers, he bought the meat at different shops. And finally, when the grub had reached a length of nearly three feet, he took to driving over to Parker City, where he would buy a quarter of a beef at a time, giving out that he had charge of a road-camp commissary.

Housing the larva also presented a problem. As it grew, it enlarged its den accordingly, throwing sand carelessly out across the laboratory floor. It had nearly emptied the larger box which Asa had provided for it. Besides, it gave off a strong, sweaty odor now, which made the laboratory nearly uninhabitable.

"I can't keep you in here?" Asa pondered.

Still he could hardly put it out in the yard. Despite the isolation of the cottage he had rented at the outskirts of the village, occasional passers-by would be coming over to see what he was doing. Asa had no intention of getting a flock of rabid newspaper men and fellow scientists on his trail until his experiments were successfully completed. Consequently, he solved the matter by placing the grub in the earth floor of a small woodshed, just off the rear porch.

Nor was the injection of the alkaline solution any longer an easy task. The only way Asa could get the larva out of its den was to dig it out. Constantly, he had to be on the lookout for its ugly head. Once it curled and side-swiped viciously at his arm, its toothed jaws cutting the flesh nearly to the bone.

"Yes, you would! Been trying to do that for a long time now!" Asa cried, as he clutched his bleeding arm. "You treacherous devil!"

Thereafter, he dug down beside it and placed a sort of harness about its wrinkly, hairy body. The grub's skin had become thick and tough. Asa handled it roughly, using a hypodermic with an unusually large needle to keep it from being broken by any sudden squirming. Eventually, the grub grew to be almost six feet long, the frightful trapdoor head a foot and half across. Its rapacious appetite was astounding. In fact, feeding its very greedy maw was becoming somewhat of a strain on Asa's slender stipend. He decided to let it go ahead and pupate.

Even after ceasing his injections, however, the grub continued to grow. The better part of a month passed before it finally drew its fat body down out of sight in the depths of its burrow, sealing the mouth of the hole behind it.

Standing breathlessly in the shed, Asa could hear it turning and turning, some six feet beneath the floor, as it spun and wound its cocoon-like pupal cell. For nearly two weeks the unceasing labor continued. Then, when it had finally stopped, Asa dug down to the pupa. From the portion of it which he uncovered, it appeared to be a giant, bean shaped cell about three feet through of some brittle material the color and consistency of hard rubber. No sound came from inside of it. Only when he tapped sharply on the wall of the cell were there sluggish movements. The pupa was alive all right!

For a while Asa debated taking it up and burying it in a sand pit in his laboratory. Yet on second thought, he decided it might be best to leave the cell as it was, as nature had intended it to stay during this changing stage.

Now that the larva had gone into its pupal cell, there was nothing he could do but wait until it should emerge a beautiful glistening creature, such as man had never seen before. The two smaller grubs had already issued from their cells as adult tiger beetles a few weeks previously. They were marvelously handsome little creatures, fully four inches long. Their grey bodies were sharply marked with smooth edged blotches of palest yellow. They ran swiftly about the glass cage Asa had provided for them, on incredibly long and graceful legs.

When startled, they would fly about with darting quickness, looking at first glance like huge queerly shaped humming birds.

It is one of these, the first to die, which is still to be seen in its case at the Filmore museum.

While he waited for the giant grub to pupate, however, Asa was not idle in his researches. He wrote a voluminous report of the whole experiment to be presented before the National Entomological Association when the giant tiger beetle should have completed its metamorphosis, indubitable proof of the correctness of his theories.

ASA did considerable dreaming in those days. Long hours of evenings he would sit beside the great buried cell, feeling the faint pulsations of life inside it, while he envisioned a gaping world, astounded by the marvel that would some day be paraded before its awed gaze. He had other dreams, half formulated plans of breeding a giant race of ants that would be trained to do man's manual labor. It was an inspiring thought!

He made countless experiments.

The months slid swiftly by. Almost a year had passed since the grub had spun its pupal cell. Asa had no way of knowing when it would come out as an adult, since his experience with the smaller larva had shown him that the period of pupation was lengthened abnormally by the increased growth. Yet as spring came around again, he had a growing conviction that the pupa had nearly completed its change.

Lying on the woodshed floor, he could hear slight scraping sounds, impatient movements as though the beetle were tiring of its cramped cell. Could it be getting ready to emerge? For the first time, Asa thought seriously of just how he would handle it when it did come out. He looked about the woodshed. It was a staunch building. Yes, it would hold the beetle for the time being. He would muzzle its fearful jaws, and perhaps clip one of its wings. No trick to do that. There would be plenty of people willing to help him. Too many, most likely!

"No use worrying about that, yet," he told himself. For all he knew the giant beetle might never emerge. Life was full of such disappointments.

In that respect, however, he need have had no worry. The monster emerged all right! But not in the placid manner Asa had expected. And yet he should have anticipated it. He was something of an authority on the habits of *Cicindela Clymene*. Consequently, there was really no excuse on his part for what happened. But Asa realized this too late.

It was sometime during the morning of May 17th, when the monster beetle ate the end out of its pupal cell and climbed up into the woodshed to dry its waxy wings. The day is etched with painful grooves on Asa's memory. Arising late, he had had time only for a glimpse into the woodshed before he hurried off to his classes. A wonderous spring morning, it was, the very air rich as rare old wine and the damp earth springy beneath his feet. Lilacs were in full bloom along the short cut to the campus; and the sky above

was just as clear as beautiful, unflawed turquoise.

The morning and afternoon passed uneventfully, except for a growing presentiment on Asa's part. Could anything have happened to the pupa? Could it have come out? Asa fidgetted restlessly in his chair, repeating his lectures automatically, without thought. As soon as the last of them was finished, he grabbed his hat and went hurrying home. Getting the key from the kitchen, he headed out to the woodshed; then stopped, gaping fearfully, before he reached it.

A great ragged hole had been torn in the side of the shed. The boards were crushed and splintered as though they had been cut by the dull, jagged blade of a pair of enormous shears. Asa clutched suddenly at his throat. No man had ever made a hole like that! He ran toward it wildly, leaning over the broken board ends to peer into the shed. The building was empty.

Asa stepped through the hole and stumbled over the clods that had been thrown carelessly across the floor. In the center of them was a black hole a yard in diameter, running straight down into the earth. The little scientist got down on his knees the better to stare down into the newly opened den.

"It's come out—got away!" he whispered. "But it can't have gone far. I'll catch it somehow."

A musty, sweetish odor, like that of wet silk, came up out of the hole. Probably from the newly opened cell, he decided. He turned to gaze calculatingly at the hole torn in the side of the shed. Judging from that, the beetle must be larger than he had thought it would be. A monster of a creature! Asa ran his fingers nervously through his thick brown hair. The sooner he caged it, the better!

His thin brows pulled together in a worried scowl. There was something of fiendish ruthlessness in the way huge clods and splintered boards lay scattered about the shed. "Looks like it'd just tried to tear things up?" he muttered dubiously. "Must be strong as a horse! And if it runs and flies as fast as the little ones . . . !"

A horrible fear clutched at Asa's heart. He commenced appreciating, for the first time, the awful strength and speed of the monstrosity he had grown. The thought was appalling. He wet his lips, struck by a sudden more direful thought. Ah, surely not! It wouldn't do that? Yet it had to eat? And here he was standing idle. Asa leaped over the rubbish and went racing back to the house. Here he got a double barrelled shotgun and loaded it with buckshot. Once he got within range of the beetle, he promised himself, he would cripple it by shooting off a wing. If that didn't stop it, he'd blow a leg off.

As an afterthought, he looped a coil of rope over his arm. It might come in handy for muzzling those jaws.

So armed, Asa stepped out into the yard again. Being completely familiar with the habits of *Cicindela Clymene*, he was under no uncertainty as to where to look for the escaped monster. These tiger beetles, he knew, hunted chiefly at night, hiding out during the day beneath sticks and rubbish. Consequently, the beetle, huge as it was, would probably be hiding somewhere

in a thicket. Perhaps along the brush-like banks of Willow Creek; a curve of which pushed over into Asa's back yard.

Since there were few such uncultivated spots in the vicinity of Filmore, it was at least a likely place to look. Of course, if he didn't find it soon, he supposed he would have to get some of his students to help him. There were several that would be willing. And the beetle couldn't get away for long, not if everyone were on the lookout for it. He might even offer a reward? Yes, that would probably be the simplest way to handle the matter.

As the afternoon passed and he found no trace of the beetle, Asa became more and more convinced that this latter plan was the only logical one to follow. Returning to the cottage, he got into his car and drove over to the Filmore post office. At the writing desk, he printed a notice on the back of a small poster.

\$100.00 REWARD

Will be paid for the capture of a giant tiger beetle, escaped from my laboratory. This creature, which has been grown to a probable body length of between five and six feet, through stimulation of its endocrine glands, will likely be found hiding in thick underbrush during the day, issuing forth at dusk to hunt. Supposed at the present time to be hiding along Willow creek.

ASA STEPHENS, *Professor of Entomology,
Filmore College*

THIS would set the busybodies to talking, Asa mused as he signed the notice. Plenty of them, no doubt, would consider him cracked. The little scientist's thin lips drew back in an amused smile. Well, once they saw the beetle, they'd have an opportunity to change their minds!

There was a group of men talking excitedly by the door as he came into the office. In his own preoccupation, Asa had taken no notice of them. Glancing at them now, he smiled again. The bulletin board was to one side of them. He would go over and stick up his notice. They would want to know what it was all about. It was as well to start the ball rolling. He moved over to the board and was digging out a thumb tack when a hoarse exclamation caught his ear.

"A madman! That's what done it!" said one of the men in an awed tone. "Why, old Jim was chopped up like he'd fell in a separator! The awfulest look on his face. I never seen nothin' like it!"

Asa paused, a ghastly premonition coming to him. He thrust the reward notice guiltily behind his back. Could it be possible? My God, if it were! He stood there scarcely breathing.

"The Callahan girl was the same way!" another exclaimed. "Why her eyes were almost popping out of her head. And she was white as a ghost!"

"White, you say? So was Jim. Like as though the blood had all run out of his body—hangin's too good for a fiend like that!"

Nausea gripped at Asa's vitals. A fiend, was it? A

fiend that sucked the blood from the mutilated bodies of its victims! That would account for the blanched faces, the terror fixed eyes. It could hardly be coincidence. He moved closer to the group. "Do they know who did it?" he asked timidly.

"Not yet," Mills, the tall, hawk-nosed proprietor of the Filmore hotel answered him. "But he can't get away. The constable's got three posses out scourin' the country."

"Where—where did it all happen?"

"Right down below your place, about a mile. Along Willow creek. What gets me though, is that whoever done it would tackle old Jim right out in the middle of a field. Sneaked up and grabbed him off a plow, it looks like."

"Oh, my God!" gasped Asa. What surer proof could there be, than that? *Cicindela Clymene* always stalked their prey in the open! Asa shuddered. The hotel man was looking at him queerly. "And the girl?"

"Caught her as she was crossing Fintel's bridge! Her brother found her when he went out to see why she didn't come home. She was lying there, right in the middle of the road."

"Her clothes all torn off!" put in another man.

Asa swallowed hard and turned away. Could Mills suspect him? He walked over to the waste paper basket and tore the reward notice to small bits. On second thought, he pocketed the pieces. It would never do to have someone piece them together, now! He had an impulse to run wildly out of the post office, to flee from this naked tragedy before he was found out. Anywhere, anywhere to get away. He looked into his mail box, and with an effort walked casually out to his car parked at the curb.

Getting in it, he drove back to the cottage. What could he do? And the night was only started. He remembered with horror the insatiable appetites of the smaller beetles. Ever ravenous, they were! How often he had seen one of them pounce upon some helpless ground beetle, cutting through the soft portions of its armor with those powerful pincherlike teeth, then greedily drinking the blood from the still quivering carcass. Half a dozen victims would fall before the killer's savage attack, before its bloodlust was even partially satisfied.

Asa felt deathly sick, sick at heart. He closed his eyes tightly to shut out the grim picture that had come to him.

Arriving at the cottage, he went inside and locked the door. He tried to think sanely, calmly—to reason with himself. What would he say, for instance, should one of the posses visit him? If they killed the beetle, would they not immediately suspect him? Was there nothing he could do? No way to stop the carnage? To sit here helpless, was maddening! He snatched up the shotgun and ran distractingly out into the night.

An hour or more he prowled aimlessly along the brushy borders of Willow Creek. Once, he imagined he heard the sharp whir of giant wings. He cringed down against a wild rose bush, holding his cocked gun with palsied fingers. Another time, he saw a group

of approaching lights. Guessed that it was one of the posses. He turned on his backtrack, heart jumping, and ran frantically through the brush. Somehow, he got off the trail and went crashing through a blackberry thicket.

The thorns tore his clothes, biting through at his flesh. This would never do. He must keep his head! He stumbled back on the trail and stood there trembling. He reached up to his throbbing brow. It was wet with perspiration.

"Oh, my God, my God—what have I done?" he sobbed.

He made his way back to the cottage and tramped frenziedly back and forth, across his unlighted laboratory. What was the beetle doing now? Had it claimed more victims? How many? Whom? Had they found out yet what it was? Did they suspect him? Asa gave a tremulous groan. He couldn't go on this way! Better to know the worst than to stay cooped up here with his thoughts.

Still clutching the shotgun, he got in his car and drove to town again. A milling crowd of townsfolk and students was gathered about the lighted doorway of Samson's Mortuary. Asa parked the car, leaving the engine running, and joined the tense, queerly silent group, that stood on the sidewalk. They looked at him suspiciously. Looked at each other suspiciously. Two more people had been struck down by the unknown fiend—a fiend that might even now be searching for other victims. There was no clue to its identity. Yet Asa found no solace in the fact.

HE listened woodenly to the story a raspy-voiced man was telling. One of the victims had been a child. Its playmate had told an incoherent tale that might have been lifted wholly from some medieval witch book. The two boys had been, walking along a path crossing the corner of a pasture. A great shiny bird with many long stiff legs, had come flying toward them. Had dropped down on the boy in the lead. The other had seen it plainly in the evening light, before he had fled in terror.

Despite the incredulity of his listeners, the boy had stuck to his story. It had been a bird. A great, shiny bird! A short distance from the path, searchers had found the torn body of the playmate!

The raspy-voiced man branded the tale as the wild imaginings of a child. There could be no such hellish thing as a monstrous blood-sucking bird. Yet for all his logic, the crowd about the mortuary shifted uneasily. There were whisperings of a vampire. Hadn't the bodies been only lifeless husks? But it was impossible! There was no such thing.

The body of the farmer, the first to be killed, had been brought to the mortuary. Asa pushed his way to the door. A crowd was packed about the body. Asa climbed up on a chair and peered over their heads to where it lay stretched out on a table. The county sheriff and a deputy were there examining it. They seemed to be at a loss to account for the weapon that had been used. The body was terribly mangled. Asa felt himself trembling violently.

The fault was his! It was as though he had made those ghastly wounds with his own hands. It was he who was the merciless destroyer that terrorized the night!

He got weakly down from the chair. The temptation to cry out his guilt, to confess himself the murderer, came to him. He bit his lips. What good would it do? Better by far if he could somehow end this reign of death—somehow kill this abomination that his own bloody hands had reared. Or let it kill him, too! He fought his way madly through the mob pressed about the door. One of his students spoke to him, but he passed on unhearing.

A murmur passed through the crowd. Word had just been phoned in that a student had been found murdered near the edge of town. Asa shrank back as though the beetle's terrible pinchers had closed on his own sweaty body.

"Another," he whispered in agony. "Five now! Mother of God, when will it end?"

Asa walked drunkenly down the street to his car. His thoughts were an unintelligible jumble. A nightmare! To think that he should be the unintentional cause of this catastrophe! He, who felt a pang of remorse even at the killing of a mouse in his experiments.

He discovered, as he went into his house, that he was still carrying the shotgun. Must have carried it into the mortuary with him. What difference? He held it in his hands and stared at it blankly, unseeing. The shadows of the room seemed alive with accusing phantoms. Phantoms that waved grotesquely mocking arms. He would have sworn that faint screams came to his tortured ears from out of the night. He slumped down in a chair to rock tirelessly back and forth. He couldn't endure this—sitting here all alone. He would go mad.

Asa got resolutely to his feet.

Still in his shirt sleeves, he flung himself out the door. Dark clouds had blown in from the west, blotting out the dim radiance of the moon. The air was warm and sultry, smelt of rain. Asa clutched his gun tightly as he moved furtively down a cow-path that followed the grassy, meandering bank of Willow Creek.

Fire-flies played through the air, mystic golden dots, that flashed for a moment like falling meteors. Asa stared agitatedly into the inky shadows. A mantle of black, thick air seemed pressed down against the earth. A line of lightning zig-zagged across the tumultuous crest of a cloud. A peal of thunder crashed deafeningly. Presently, it commenced to rain, a slashing driving downpour that beat against the earth in wind lashed waves.

Asa stalked through it unminding. Up and down the tangled banks of Willow Creek, he wandered. The hours flew magically by. After a while the rain stopped, yet he continued to beat his way through the water drenched brush. Dawn broke in the east, pink as a Cherokee rose. Asa stopped to look up at the sky, breathing heavily. His mind was chaotic. Years seemed to have passed since the bright, sunny morning the day before, when he had hurried eagerly to his

classes. All life, all vitality had drained from his weary body.

"It's no use, no use," he whispered.

As well go home now. He would clean up, then go into town and tell the sheriff everything. They would probably think him crazy. No, not after what had happened! He took a path back to the cottage, tottering along like an old, old man, his thin shoulders slumped in abysmal despair.

THE path was muddy, his clothes torn and bedraggled. He moved slowly across his yard to the open door of the house. In front of it, he turned to stand gazing soberly at the newly risen sun, as it shot its golden rays down through the pure white blossoms of a plum thicket at the edge of the yard. A metallic grey gleam beyond the blossoms caught his eye. He held his breath as he stared at it.

"Can it be?" he gasped. He bent sideways to see the better.

Outlined behind the blooms was a grey shield marked with smooth edged blotches of palest yellow. Asa cocked both barrels of the shotgun, half crouched. He brought the gun up to his shoulder. As though it had read his intention, the monster moved out of its cover.

Fast as light it moved. Stood there just outside the thicket, eying the little scientist malignantly from great, protruding, pale greenish eyes. In even that moment, Asa could not but feel the awful beauty of the creature. It stood on slender, shining legs, seeming tensed, ready to spring. Looking up at it, Asa could see the vivid bronze coloring of its plated stomach, a full seven feet above the ground. A giant, cruel beak, that opened horizontally, was thrust out from between the eyes, jagged, horny shears nearly a foot long, shining like amber in the morning light, and stained red from the blood of its victims.

Of the gleaming metallic grey sheaths that covered the wings, Asa had only a glimpse. Then the beetle was racing toward him, so swiftly that it seemed to fly rather than run.

The scientist shrank back in horror. A mad, babbling cry was wrenched from his bloodless lips. It all seemed an impossible nightmare. He aimed his gun blindly at the flashing body. He felt the stock kick back against his shoulder as it spit out its leaden death. He pulled the trigger of the other barrel. Even as it went off, he was flung sprawling to the ground. Unconsciously, he closed his eyes, waiting for the monster's gory mandibles to close on his wretched body.

A mighty threshing was going on beside him. A great hooked claw caught him across the chest, tearing through his coat as though it were paper. He opened his eyes. The giant beetle was darting, racing wildly about the yard. It crashed against the side of the woodshed. Asa stared at it uncomprehendingly. Then he saw that the gelatinous eyes had been torn open by the buckshot.

Asa gave a shrill, triumphant cry. Strength flowed back into his trembling body. He grabbed up the shotgun with suddenly steady fingers; put in another cartridge as he got to his feet.

The beetle was standing still now, as though trying to reason out what fate had overtaken it. Its blinded front was turned upon the little scientist. Its long whiplike antennae waved in lashing circles, picking up the scent of its man victor. Suddenly, it came floundering toward him, purposefully, jaws spreading wide in a demoniac lust for vengeance. A gleaming, blood-mad colossus! Asa sprang sideways to avoid its lunging rush. Its dripping head banged against the side of the house. Asa stepped in close to the wide spread legs and emptied both barrels into the soft tissue back of its head.

The monster leaped high into the air, spasmodically—flew for nearly a hundred feet, giant wings roaring. Then it crashed to the ground—made an effort to get to its feet, and collapsed, a shining dead heap.

Asa gazed at it dully. The shotgun dropped from

his nerveless fingers. Dead, yes, it was dead. But the damage was already done! Five innocent people had paid with their blood for his mistake. He could never right that. His thin face worked tortuously. What good to tell the truth now? He had done all he could. Presently, when he had got his breath, he dragged the heavy carcass into the woodshed. Shoving it down into its pupal pit, he shoveled the hole full of dirt again.

Then he went calmly, resolutely into the house. Taking the huge report he had compiled on his experiment, he thrust it into the stove and touched a match to it.

He heated some water and washed his hands. As he looked into the mirror above the wash bowl, he saw that the hair above his temple had turned a lifeless white.

THE END

After 12,000 Years

By Stanton A. Coblenz

WHAT will our world be like 12,000 years from now? Judging by the strides that we are now making in the fields of science and mechanics, it is well nigh impossible to foretell what the world will be like even 1200 years hence. The standardizing of life which seems to be going on apace now—for business efficiency and military prowess—would seem to indicate an age of the highest sort of specialized development. Should we examine more closely the idea of specialization in various fields of endeavor, we might discern a striking similarity between our organization and—according to eminent authorities on the subject—the highly organized development of the ants, for instance. Do we not seem to be working toward an extremely specialized organization?

Mr. Coblenz, author of "The Sunken World," seems to have a genius for showing us up to ourselves, in a

most casual and incidental manner. You sometimes wonder whether he is conscious of poking fun at us all the time quietly laughing to himself, or whether he is drawing a true picture, showing us shorn of all trimmings, such as rationalizations and our high-sounding ideals, without himself realizing that he is doing it.

If we were suddenly projected into the year 13,929, what should we be likely to find? It is always interesting to allow our imaginations to roam into the distant future. Our well-known author allows his imagination free rein, though he adheres pretty strictly to scientific facts, and builds on modern tendencies. He gives us his ideas in a realistic and subtly satirical manner, which makes this story even more absorbingly interesting than "The Sunken World."

This story is published in the Spring Edition of AMAZING STORIES QUARTERLY

Now on sale at all newsstands

Locked Worlds

By Edmond Hamilton

THIS time our author, who is no longer a stranger to AMAZING STORIES readers, presents a most unique and original story. It fairly bristles with the fourth dimension, foreign worlds, adventure and excitement throughout.

As an experiment in evolution, Mr. Hamilton presents us with a number of original ideas which are not so preposterous as they may seem at first blush. Humanity, during untold thousands of years, has domesticated a great many animals, from the horse down to the cat, all

of whom at one time were wild and more or less ferocious. Even insects have been trained to perform amazing feats, so the author's ideas will not appear quite so far-fetched in the light of what has happened before in human progress.

We know you will enjoy this story, and we know it will cause endless discussion and comment from our readers, as was the case with the author's other story, "The Comet Doom." We look forward with much interest to our readers' reaction to "Locked Worlds."

This story is published in the Spring Edition of AMAZING STORIES QUARTERLY

Now on sale at all newsstands

CLAVILUX

By Robert A. Wait

Author of: "The Invisible Finite"



HE audience stirred in an uneasy manner. The curtain should rise in one minute. The absence of music seemed to bother a few. Others raised their heads expectantly from the bright colored programs in their hands. The buzz of an excited audience suddenly stilled as the rose velvet curtains before them parted, revealing a dapper gentleman in evening clothes smiling down upon them.

"Ladies and gentlemen," began the blond young Frenchman. "I am Monsieur Du Bois. That is only by way of introduction, for it has no part in this evening's entertainment. Behind me you observe my instrument of pleasure."

He gestured toward the main stage. Upon it stood a huge box-like arrangement much like the console of a theatre organ with a regular organ bench and keyboard and pedals, very similar to the ones found in most pipe organs. It was gorgeously done in gilt and spangles, and the spot lights from above shifted over the machine, as the Monsieur continued his interesting monologue.

"At the back of the stage you will observe a screen so situated that any light rays from my color organ will be reflected to you directly. In physics we would say the angle of incidence is such that you are in line with the angle of reflection."

So saying, he reached back to the console of his organ and touched a key. Instantly the theatre was brilliantly flooded with a cool green glow. The screen seemed a bottomless sea of emerald.

"No doubt many of you wonder how the whole audience may be thrown into the line of angle of reflection. I have back there an unusual screen. It is what is known as parabolic in shape, which means it is concave in a very definite mathematical curve. The source of light from my machine throws a diverging beam of light at this peculiar curve and, because of its shape, the screen reflects all of the impinging rays in nearly parallel lines; thus each one of you receives a few rays reflected directly from the light source with no confusing cross interference of one ray with others."

Seating himself, the young man signalled the spot lights out. Only a dim bulb lighted his keyboard. The house was as still as a summer calm while greens flowed into purples, flashed into scarlets, and faded to soft yellows and blues.

"You note I do not have any music. I find that music is detrimental to the moods I desire to carry my audience through. Anyway, light and color correspond very closely to noise and musical notes. Color is primarily a function of frequency, not of wave lengths, just as high musical notes are produced by frequencies as high as 15,000 vibrations or more per second. Low notes may go as low as twenty vibrations per second and still be heard by the ear."

"Reds are light waves of extremely slow vibrations while violets approach the extremely rapid vibrations such as those of ultra-violet light which you all know to be present, yet invisible to the eye. Corresponding to these ultra-high frequencies we have the infra-reds or colors of such low frequency that our eyes will not detect them. Our senses feel their warmth, however, just as they feel the warmth of red rays if either kind is focused by means of a burning glass."

He turned to his organ with the announcement that his first number would be an overture in color, built up much as an overture is written for music. Before him was a peculiar type of score, similar to, but different from, musical scores.

With a crash of color, if such can be conceived, the overture began and for ten minutes the audience watched breathlessly while colors flooded the screen; reds danced through blues; circles of green sailed through and behind pink and white clouds; black

thunder clouds melted to golden mists; blue sky showed through with the flashes of purple and scarlet of birds. Abruptly the theme changed. A cool dark green with moving lines of brown and patches of greys and blues took on through the woods where birds flickered among the trees. A streak of rusty red across one corner of the picture showed where sly br'er fox had slipped through—flare of yellow as the traveler again came

into the bright sunlight of the open field. Soon the multi-colored roofs of a village floated by and hazy clouds of dust rose from a herd of sheep scampering down the lane.

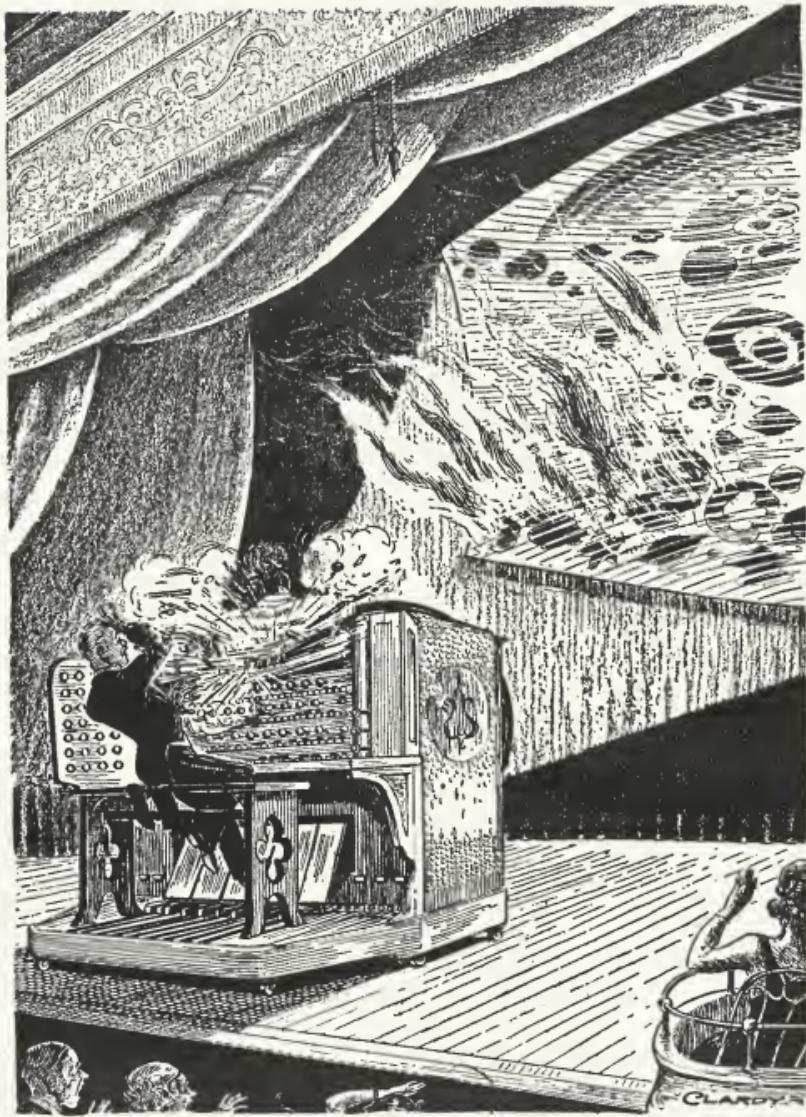
AS the piece ended, the audience sighed in ecstasy. Never had it had that particular side of its nature stirred. As Du Bois rose, applause broke forth, and the spot lights searched out the smiling artist.

"You enjoy it, yes?" He fell into the broken English of his earlier days in the States. "May I ex-

THE color organ, invented by Thomas Wilfred some years ago, and now being used to some extent in the Paramount Theatre in Brooklyn, is, without a doubt, capable of much development.

Some people can, naturally, "hear music in color." That is, they can interpret sound in color formation. Some music, especially Wagner's, lends itself particularly easily to such interpretation.

But it would be interesting to be able to "hear" some of the famous masters' works in color. The author of this story, being himself a scientist, does not exaggerate the possibilities of such an instrument, and because he apparently also possesses a natural feeling for the rhythm and cadence of music and color, some of his descriptions are unusually fine.



The audience was on edge. Faster and faster the colors flared and streaked. . . . Still the musician played madly at his keyboard. A scream of terror split the air as the upper console of the clavichord splintered. The screen flared a terrific series of rays and burst into genuine fire.

plain, friends? This is my color-organ, my clavilux. I revel in its playing just as a pianist revels in his musical masterpieces. In music the artist must skillfully combine pitch with pitch at a certain tempo to produce a harmonious series of sounds. This constitutes a work of art if properly done. I combine color—red, blue, and so on—with form—clouds, circles, squares, and others; this combination I move in a graceful way at certain speeds. Thus the clavilux combines color, form, and motion to delight its player and audience. Even more skill is necessary to play a clavilux or color-organ than is required for a piano. By these consoles of keys I can secure 100,000 combinations of color and form which I can move at will—up, down, around, across. You have all heard sad and doleful music, I am sure. Now I ask you to listen with your eyes to this tragic piece of color—shape."

Seating himself, the artist again secured darkness and began to weave magic colors and shapes before his spell-bound audience. Predominating were blues and reds, the more somber reds, and finally the very deepest reds or those of extremely slow vibration. Faster the colors flowed, melted into one another, flashed suddenly out—scarlet, then azure, cobalt, cerise, and somber dull grey. Frenzied they boiled and splashed about the screen, shapes jumbling about chasing each other, dissolving into nothing, racing toward the front of the field, speeding off into that blue grey void beyond, slipping into that fierce fiery border of reds. The trend was more terrifying than sad.

The audience was on edge. Hard-headed men breathed quickly and clutched their hats with destructive force. Faster the colors flared and streamed. The screen was nearly devoid of definite visible color now, yet a devilish warm glow played about the flashing forms of pale yellow and green. Perspiration streamed from the brows of half the audience; children cried, men and women shifted uneasily, murmuring and whispering. Still the musician played madly at his keyboard. A scream of terror split the air as the upper console of the clavilux splintered. The screen flared a terrific series of reds and burst into genuine fire.

It all happened in less than ten seconds, and Monsieur Du Bois stood aghast at the turmoil. He shouted for quiet, wildly gesticulating, and falling into French in his excitement. The audience hesitated, whimpered, and slowly sank back to its seats, muttering and gazing at the ashes of the ruined screen. Stage hands had soon extinguished the fire.

"Mesdames, monsieurs, I beg of you to calm yourselves. No harm can befall you. I am to blame for your fright. Two things are to blame. First, I have played for you one of the new modernistic compositions entitled 'Collapse of the Cosmos.' It has never been played before and is evidently too violent for a beginning audience. The emotion I stirred in you was a blind fear of catastrophe. Many musical compositions produce anger, some fear, others laughter—so it is with the clavilux. Compositions may be written for producing any desired mood. Very little is yet known about the effect of concerts in color on audiences,

so you will please forgive if I have frightened you. We are none of us educated in the art of enjoyment of combination of color, form, and motion. May I relieve you with a light composition full of sunshine and laughter? A new screen has been placed by the stage crew. Please?"

Seating himself he ran his fingers over the keys not affected by the splintered console, and the colors flashed out once more. This time bright gay forms danced and floated; warm blues, cool greens, delightful yellows, and fluffy pinks chased about the screen, ever shifting, ever changing in shape, melting and flowing about. Children laughed happily and clapped their hands. Women smiled again and men relaxed their grim features to pleasant enjoyment. Evidently the simple sketch of light color was having its sooth-ing effect.

"May I play my newest composition for you, ladies and gentlemen?" The performer looked expectantly at the calm faces turned up to him. No dissenting voices arose, so he proceeded.

"Musicians are able to distinguish a single pitch from a group of sounds. Notes usually are accompanied by groups of pitches called overtones. Few of you have heard a single pure pitch. Nearly every instrument has its overtones. I wish to play for you a piece in color, form, and motion in which I emphasize the 'overtones' of those three phases. Doubtless you have heard church organs whose lowest note was a '16 foot,' as the deep tones are called. These may be played by a skilled operator in combining several of the lower and middle notes to give the effect of a very low note which is known as a '64 foot' note. Naturally this has a very low vibration. If an 128 foot note could be produced, it would be apt to wreck the building in which it was played."

"It is my ambition to produce an extremely low vibration in color by the same general method used in obtaining the low organ note and with the overtones. With this in mind, I wish you to be my judge."

COLORS began to flow as they had never been seen before. Colors that man had never before witnessed splashed and ran across the screen. Forms that the wildest imagination had never before conceived of, jumped and skulked about through the maze of color. Gradually the trend was more and more to the red, and motion and form slowed to a few regularly appearing pulses. Men grew warm about the collar. Women fanned themselves with programs. Children moved restlessly. Still the color flowed. Perspiration trickled down the organist's face; his features became distorted, his eyes wild. He had glanced at the screen whereon his composition glowed. Too late he realized what was going on. Overtones, to be sure. He'd give them plenty! What was that buzzing in his ears? Drat these hot nights! Where was that heat coming from? That chord again—it was immense! Feel that thrill and wild exultation it sent through you. What was that tumult—the audience felt it too. Well, let them—give them more. That low vibration—what was the combination he had figured would produce it?

Oh, yes, press all the reds and all the violets to cause sufficient interference of vibrations. There, it was done!

The screen flamed. The back stage smoked for a second, flashed into a mass of fire and with a roar the audience rushed for the exits, fighting, screaming, scratching.

He had done it! What was that awful ache in his head—they were wild—the building had caught fire—must have produced that low vibration—heat ray be-

low the infra-reds. Ah, it was well—damn that buzz in the ears—snap, flash—blackness.

Morning found an article in the paper concerning a peculiar performance of the color-organist in which the electric wiring seemed to have caused a fire and frightened the audience. None of the audience could give an accurate or connected account of the affair.

The performer, so the news item said, had fainted under the extreme heat, but he was doing nicely in the local hospital.

THE END.

Transports of Love

By Bob Olsen

Long ago, ere speed was king,
Kate thought walking just the thing.
Oft from school with me she'd hike
Till she learned to ride a bike.

Willie Jones, who owned a wheel,
Soon contrived my girl to steal.
But, with horse and ramahoot,
One fine day I cut Will out.

Buggy rides became passe—
Motorcycles had their day.
Will bought one, and Kate would ride
In the "bath tub" by his side.

Now that we can travel fast
Kate has time to wed—AT LAST!
Naught on earth can come between us.
(We shall honeymoon on Venus.)

But, when folks began to stare,
Kate gave Jones the well-known air.
She preferred to ride each day
In my nifty sport coupe.

Autoing obtained a while—
Then 'twas Willie's turn to smile;
When he launched his monoplane,
Fickle Kate was his again.

Going Jones just one step higher,
I acquired a new space-flyer.
In it Kate and I oft spoon
While we're sailing 'round the moon.

What Do You Know?

READERS of *AMAZING STORIES* have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a textbook. Moreover, most of the stories are written in a popular vein, making it possible for any one to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge.

- If you could see living beings on a star, why would it be impossible to communicate with them, no matter what radio power was at your disposal? (See page 205.)
- What ductless glands control or affect the growth of the human body? (See page 208.)
- How will a parabolic reflector act on diverging rays, which originate at its focus? (See page 214.)
- What is the approximate range of frequencies of audible sounds? (See page 214.)
- What analogy can be drawn between sound and light based on frequencies. (See page 214.)
- Why can a note below the range of an organ's pipes be produced? (See page 215.)
- What theory has been evolved to account for green water in the Arctic seas? (See page 220.)
- What is the difference in consumption of food between the Arab and the Esquimau? (See page 228.)
- When may the Arctic winter be said to begin? (See page 228.)
- How did the famous Arctic explorer, James Ross, try to use foxes to tell of his whereabouts and of provision depots? (See page 230.)
- Can unmelted snow be used by travelers in the Arctic to quench thirst? (See page 238.)
- Which is considered the coldest month in the Arctic? (See page 241.)
- How is the thickness of ice counted on for sustaining different loads? (See page 247.)
- Could you kindle a fire with a piece of ice? (See page 251.)
- Give instances of the consumption of food in the Arctic—see also question 8. (See pages 256-257.)
- What winters in Europe besides 1828-1829 have been celebrated for intense cold? (See page 258.)

The ENGLISH at the NORTH POLE

By Jules Verne

Author of "Off On A Comet," "A Trip to the Center of the Earth," etc.

What Went Before:

RICHARD SHANDON receives a letter signed "K.Z. Captain of the Forward," offering him the post of chief officer, giving him full instructions and sufficient funds for the building of a brig. A visit to the bank confirms the statement in the letter in regard to the funds, so he orders the brig to be built according to specifications and engages James Wall as his second mate and a man named Johnson, as boatswain. Johnson selects and engages the balance of the crew, although he can give no information as to their destination, their captain or their mission.

Dr. Clowbony, the ship's doctor, duly arrives, just as the building of the Forward is about completed, in accordance with advice which Shandon received from the unknown captain. And on the 5th of April, when the brig is almost ready to sail, the captain's dog arrives. The Captain had apprised Shandon of the animal's expected arrival and even ordered a kennel to be built for him.

The balance of the crew consists of Simpson, the harpooner; Bell, the carpenter; Foker, the master; and Garry, Bolton, Branton, Gripper, Clifton, Warren and Pen, sailors.

Though the Captain is expected to make himself known at the moment of starting, he only sends a last minute letter of instruction on to the direction of the expedition. They start off for points North, through Davis Strait, Baffin Bay and clear into the Arctic regions and—following later mysterious instructions by a letter—into unknown waters.

It is not until after the brig and crew leave Upernivik and the icebergs become more numerous and the waters become practically unnavigable, and some of the sailors begin to threaten mutiny, that the captain, who had passed as the sailor named Garry, appears and discloses his plans. He is none other than Captain Hatteras, who had some years before spent an enormous amount of money and sacrificed the lives of all of his crew in a mad attempt to reach the North Pole and plant the English flag there. He offers the men a tempting, additional sum of money for every degree they push beyond the 82nd parallel, and the men eagerly accept the proposition—for the time being at least—and they start pushing ahead again.

But more hardships follow and sickness due to the freezing temperature sets in and mutiny once more hovers in the air.

Part II

MELVILLE SOUND, though perfectly navigable, was not free from ice. Extensive ice-fields stretched beyond as far as the eye could reach, with solitary icebergs appearing here and there, standing motionless, as if anchored firmly to the glaciers.

But the Forward found good leads everywhere, and steamed rapidly along, in spite of the variable wind, which kept shifting from one point of the compass to another.

The sudden changes of the wind are most remarkable in these Arctic Seas. Often, but a few minutes will separate a dead calm from a strong tempest, as Hatteras found to his cost on the 23rd of June, just as he reached the middle of the immense bay.

The most constant winds are those which blow from the polar ice-belt towards the open water, and these are extremely cold. On this day the thermometer sank several degrees, and the

wind suddenly veered south. Thick snow began to fall, and such violent gusts of wind arose, that Hatteras ordered all the sails to be close-reefed; but, before his commands could be executed, one of the smaller sails was already torn away.

ACCORDING to a news item in THE WORLD of March 30th, Sir Hubert Wilkins, famous explorer, plans an attempt to cross the North Pole by submarine. He tells, in a general way, about the soundings that were made by him and by others, of various parts of the Arctic waters and how he worked out plans for successful navigation through the iceberg-filled waters of the extreme northern regions. In reading through this item carefully, we were astonished to find how many of the statements sounded familiar to us. We had just finished reading the balance of Jules Verne's story and the sequel and we remembered that Captain Hatteras, in the story, met precisely those obstacles which Sir Wilkins mentions, and he combated them in almost exactly the same manner in which Sir Wilkins plans to overcome them.

It seems to us to be exceedingly interesting that Jules Verne, who did practically no traveling and did not have the advantage of the scientific knowledge of the last fifty years (for certainly much has been learned during that time) should have foreseen so accurately existent facts and devices for gaining the desired arctic goal.

Because this particular story is so timely and because it is one of Jules Verne's most interesting and least known stories, we have decided to follow "The English at the North Pole" with its sequel "Desert Ice" instead of waiting for some future time. Therefore, instead of merely completing the one story, we are including half the sequel, the balance of which will be published in the July number.

Hatteras never left the deck while the gale lasted, though the fury of the blast compelled him to change his position. There he stood, issuing his orders with the most imperturbable calmness, though the sea was lashed mountains high by the raging tempest, and his brig was tossed up and down on the waves like a child's toy—now borne aloft perpendicularly on the crest of some gigantic billow, her steel stem gleaming for an instant in the light; and then precipitated into an abyss amidst clouds of spray, her stern and screw rising completely out of the water; rain and snow all the time falling in torrents.

The Doctor, of course, could not lose the opportunity of getting drenched



Presently an enormous mass began to rise at the side of the ship, extending right along her hull. It seemed forced upward by some irresistible power, higher and higher. . . . Suddenly the vessel was entirely lifted up, and for a brief space seemed to float in the air.

to the skin. He stayed on deck with the rest, in silent admiration of the grandeur of the spectacle; and he found his endurance well repaid by the sight of a peculiar phenomenon, which is only observable in polar latitudes.

The storm raged within certain limits, not extending farther than three or four miles. This arises from the fact that, in passing over the ice-fields, the wind is robbed of much of its power, and its fury is soon exhausted. Every now and then, in a fall of the swell, the Doctor caught glimpses of a clear sky and a calm sea beyond the ice. The brig had only to go right forward to get into smooth sailing; but she ran the risk of being dashed to pieces in the transit. However, after some hours, Hatteras succeeded in getting beyond the storm, though only by a few cable-lengths, leaving it still raging in the distance.

The appearance of the bay was totally altered. A great number of bergs had become detached from the coast ice by the double influence of wind and waves; and these were scudding along towards the north, crossing and clashing against each other in every direction. They could be counted by hundreds, but the Sound was so wide that the *Forward* found little difficulty in steering clear of them. It was a magnificent sight; for the moving masses, being endowed with unequal degrees of velocity, seemed like so many runners on a vast race-course.

The Doctor was surveying the scene with enthusiastic admiration, when Simpson, the harpooner, came up, and drew his attention to the changing tints of the sea, from bright blue to olive green.

Long bands stretched from north to south, with the edges so sharply marked, that the line of demarcation could be traced as far as the eye could reach. Sometimes, again, they came to sheets of clear, transparent water, close to others which were perfectly opaque.

"Well, Dr. Clawbonny," said Simpson, "what do you say to this? Isn't it very peculiar?"

"I adopt the theory of Scoresby, the whaler," replied the Doctor. "He thought that the blue waters had been deprived of the myriads of animalcules and medusæ—a class of zoophytes with which the green waters are loaded. He had made many experiments on the subject, and I quite believe he is right."

"Ay, sir; but there is more than that to be learned from the color of the water."

"Is there, really?"

"Yes, Dr. Clawbonny, you may take a harpooner's word for it; if the *Forward* were only a whaler, we should have good sport."

"And yet," said the Doctor, "I don't see the smallest whale anywhere."

"All right! Take my word for it. I say, we'll see some before long. It is a lucky chance for a whaler to come across those green stripes in this latitude."

"And why so?" asked the Doctor, always eager to gain information from those who had a practical knowledge of the subject in hand.

"Because it is in those green waters that most of the whales are caught," replied Simpson.

"How is that?"

"Because the whales find most there to eat."

"Is that a positive fact?"

"Oh, I have tested it a hundred times in Baffin Bay, and I don't see why it should not hold equally good in Melville Sound."

"I daresay you are right, Simpson."

"Stop a bit!" said the harpooner, leaning over the side of the vessel. "Do you see that, Dr. Clawbonny?"

"It looks like the wake of a ship."

"Well, that is the fatty substance the whale leaves behind in its track. Trust me, the animal that left it can't be far off."

There was certainly a peculiar smell in the atmosphere, and the Doctor watched carefully to see if Simpson's predictions would be verified.

He had not to watch long, for the man at the mast-head called out:

"A whale!! To leeward of us!"

All eyes turned in the given direction; and, sure enough, about a mile from the ship, jets of water thrown up to a considerable height were plainly visible.

"There she is!" exclaimed Simpson. "That's her and no mistake, blowing away!"

"She has disappeared!" said the Doctor.

"She could soon be found, if we wanted," replied Simpson, in a tone of regret.

But, to his amazement—for no one would have dared to propose such a thing—Hatteras gave orders to equip the whale boat. He was not sorry to be able to afford his men a little diversion, and perhaps secure a few barrels of oil. His permission to capture the whale gave great satisfaction to all on board; and, forthwith, four sailors jumped into the boat. Johnson was to steer, and Simpson took his place in the front, harpoon in hand. The Doctor could not be kept from joining the party. The sea was pretty calm, and in ten minutes the boat was at the spot.

The whale had just plunged below again, but soon reappeared, discharging a volume of mucous matter and vapor combined, from the blow-holes in the head.

"There! there!" cried Simpson, pointing to a spot about eight hundred yards from the boat.

The enormous monster rose and sank in the waves incessantly, her huge black back looking like a rock in mid-ocean. Whales are slow swimmers, and this one seemed in no hurry, certainly.

The boat cautiously approached, unperceived by the enemy, owing to the opaqueness of the green water. To see a frail bark attack these Leviathans is always a thrilling spectacle, and this whale must have measured nearly 100 feet. Larger ones are frequently met with between the 72nd and 80th degrees, and ancient writers speak of some specimens more than 700 feet long; but such descriptions are evidently entirely fabulous.

As soon as the boat got close to the whale, Simpson stopped the rowers, and, brandishing his harpoon, hurled it so dexterously at the foe that the sharp barbs buried themselves deep in the thick layer of fat on her back. The wounded monster dived below, and immediately the four oars were set up on end, and the line

let out which was attached to the harpoon. It was lying in a coil at the front of the boat, and the rapidity with which it unwound itself was prodigious.

For more than half an hour the boat was dragged along after the whale in the direction of the moving icebergs, and always farther away from the brig. The motion was so rapid that it was necessary to wet the rope to prevent its taking fire from the excessive friction. When the whale at last slackened speed, the line was carefully drawn up by degrees, and coiled up again. Presently the animal rose to the surface once more, lashing the sea with her ponderous tail, and making a perfect waterspout, which fell on the boat like a violent shower of rain.

The men began to row vigorously forward, and Simpson seized a lance, and stood ready for combat. But, next moment, their coveted prey darted in between two gigantic ice-mountains, where it would have been dangerous to follow.

"Confound it!" exclaimed Johnson.

"Go on! Go on!" shouted Simpson, wild with excitement. "We are sure of her now."

"But we cannot go after her between those icebergs!" said Johnson.

"Yes, yes, we can," cried Simpson.

While they were still discussing whether to venture or not, the question was settled for them, for the passage began rapidly to close; and Johnson had only barely time to cut the rope with a hatchet when the rocky walls met, crushing the unfortunate animal between them with irresistible force.

"Lost!" exclaimed Simpson.

"Saved!" was Johnson's reply; while the Doctor, who had never shown the white feather throughout, coolly said, "My word! but that was a sight worth seeing."

The crushing power of these mountains is prodigious. The whale had met with no unusual death; for Scoresby mentions the fact that, in one summer, thirty whales perished in Baffin Bay in a similar manner. He also saw a vessel with three masts smashed flat, and two other ships were pierced through, as if by a lance, by fallen icebergs more than a hundred feet long, with sharp spiked ends, which met together across the decks.

A few minutes later, the boat regained the brig, and was drawn up to its accustomed place on deck.

"It is a lesson," said Shandon, aloud, "for rash people who will venture into narrow channels."

CHAPTER XIX

Isle Beechey

ON the 25th of June the *Forward* sighted Cape Dundas, the north-easterly point of Prince of Wales' Island. The difficulty of navigation increased as the packs became more numerous. The distance that, in ordinary circumstances, the brig would have made in a day, took her from the 25th to the 30th of June.

Hatteras knew as well as Shandon how the coals

stood: but relying on finding stores at Beechey Island, he would not lose a moment for the sake of economy. The *distance* south, short as it was, had greatly delayed him; and though he had taken the precaution to start in April, he was not a whit farther on now than preceding expeditions had been at a similar period.

On the 30th of June, Cape Walker came in sight, and soon afterwards Cape Bellot, so named from the brave young French officer who perished in the English expedition. Three cheers were given to his memory as the brig passed, pushing her way through the loose floes across Barstow Straits.

Hatteras was so afraid of missing the island that he hardly quitted his post on the deck for an instant. All that skill and *sang froid*, and even nautical genius, could do, he did. Fortune certainly showed him no favor, for at this time of the year he ought to have found the straits nearly free from ice; but, at length, by neither sparing his steam, nor his men, nor himself, he gained his end.

On the 3rd of July the ice-master signalled land ahead to the north, and after consulting the chart, Hatteras came to the conclusion that this must be Beechey Island. Johnson's heart beat quicker as they approached, for this was not his first visit, and memory was busy with the past. He had been quartermaster on board the *Phoenix*, the expedition in which Lieutenant Bellot had been engaged, and Hatteras looked to him for information as to the facilities for anchorage. The weather was magnificent, and the thermometer continued steadily at 57°.

"Well, Johnson, do you recognize the place?" said the captain, as they were getting rapidly near.

"Yes, sir, it is certainly the island; but we must bear a little more to the north, the coast is more accessible there."

"But what about the huts and the stores?" asked the captain.

"Oh, you cannot see those till you get on shore. They are behind those hillocks you see there."

"And you say you landed considerable stores there?"

"Ay! that we did, captain. It was here that the Admiralty sent me in 1853, under the command of Inglefield, with the *Phoenix* steamer and a transport loaded with provisions. We carried enough with us to revictual an entire expedition."

"But the commander of the *Fox* drew on them largely in 1855, did he not?" said Hatteras.

"Rest easy, captain, you'll see there is enough and to spare yet, and cold has such a wonderful power of preserving food, that we shall find everything as good as the first day it was packed."

"I don't care about the provisions. I have plenty for several years. It is the fuel I am anxious about."

"Well, captain, we left more than one thousand tons of coals there, so you need not fear about that."

"We might land now, I think," said Hatteras, who had been closely watching the shore, glass in hand.

"You see yon point, sir," said Johnson. "When we have doubled that we are quite near our anchorage. Yes! it was from that very point we started on our way

back to England with Lieutenant Cresswell and the twelve sick sailors belonging to the *Investigator*. Ah! well, we had Lieutenant McClure back safe again. Poor young Bellot never saw his native land again. His is a sad story; but, captain, I think we may cast anchor now."

"Very well," said Hatteras, giving the order immediately.

The brig had just reached a little bay, sheltered by nature from the north, south, and east winds, and within a cable's length of the shore.

"Mr. Wall," said Hatteras, "get the boat ready, and six men to go with her to carry coals on board."

"Yes, sir," said Wall.

"I am going ashore in the pirogue with the Doctor and boatswain. Mr. Shandon, you will please to accompany me."

"At your service," replied Shandon.

A few minutes later all four landed on a low, rocky beach.

"You must be our guide, Johnson," said the captain. "Do you know the place again?"

"Perfectly, sir," was the reply; "but I see a monument there that is new to me."

"That!" exclaimed the Doctor; "I can give you the history of that. But let us go up to it, for I expect it will best explain itself."

They soon reached it, and the Doctor, taking off his cap reverently said:

"This is a monument erected to Franklin and his companions."

And so it was. Lady Franklin sent a tablet of marble to Dr. Kane in 1855, and entrusted another to McClintock in 1858, to be set up in Beechey Island. McClintock executed his commission religiously, and placed this tablet beside the funeral stone raised to the memory of Bellot by Sir John Barrow. It bore the following inscription:

TO THE MEMORY OF
FRANKLIN, CROZIER, FITZ-JAMES
AND ALL THEIR BRAVE COMRADES,
Officers, and faithful companions, who suffered and
perished for the cause of Science and
the glory of their Country.

This Stone is erected near the place where they spent their last Arctic winter, and from whence they set out to triumph over difficulties or die. It betokens the hallowed memory in which they are held by admiring fellow-countrymen and friends, and the anguish, subdued by faith, of her who has lost in the leader of the expedition, the most devoted and affectionate of husbands.

It is thus that He led them to the heaven above
where all rest in peace.

1855.

This stone on a lonely shore of these distant regions, spoke sorrowfully to the hearts of these men. All that remained of Franklin and his brave band, so full of life and hope, was this marble block. And yet in spite

of such gloomy warning, the *Forward* was about to rush on in the very path of the *Erebus* and *Terror*.

Hatteras was the first to rouse himself from such dangerous contemplations. He climbed hastily up a little hill, from the top of which Johnson said the storehouses could be seen.

Shandon and the Doctor rejoined them immediately; but none of the party could discover anything but a far-stretching expanse, without a trace of human habitation.

"Well, that's strange!" said Johnson.

"What now? Where are the depots?" asked Hatteras, sharply.

"I don't know—I can't see," stammered Johnson.

"You have mistaken the road, perhaps," suggested the Doctor, thoughtfully.

"Yet it seems to me," said Johnson, "that it was just here—"

"Well, be quick, pray, and tell us where to go," said the impatient captain.

"Let us go down again; for I may be wrong. It is seven years ago now since I was here, and my memory may be at fault."

"Especially in a country where such monotonous uniformity prevails."

"And yet—" muttered Johnson.

Shandon made no remark.

After waiting a few minutes longer, Johnson stopped all of a sudden, and said:

"No, I am right, after all!"

"Well," replied Hatteras, looking about, "and where are they?"

"Do you see how the ground seems to swell out there," said Johnson, "just where we are standing, and can you trace the shape of these big mounds in it?"

"Well, and what's that to do with the question?" inquired the Doctor.

"These are the graves of three of Franklin's sailors," was the reply. "I'm sure of it; and a hundred paces off was the principal depot. I am not mistaken now, and if the stores are not there, it must be owing to—"

He did not venture to say what he thought; but a terrible suspicion shot through Hatteras, and made him rush impetuously forward. But where were the stores on which he had so confidently reckoned? This was the right place; but destruction, and pillage, and ruin had been at work, and not a vestige remained of the vast supplies laid up for the relief of hard bestead navigators. And who had committed these depredations? Was it the wolves and bears? No, for they would only have destroyed the provisions; but not so much as the tattered remnant of a tent was left, not a morsel of wood, nor a piece of iron; and, worse still, for the *Forward* at any rate, not an atom of coal! It was evident that frequent intercourse with European ships had taught the Esquimaux the value of these things, for they must have been coming back and forward ever since the *Fox* had touched at the island, constantly pillaging, till all trace of a storehouse had disappeared in the snow.

Hatteras was dumfounded. The Doctor shook his

head and gazed silently. Shandon said nothing; but a close observer might have seen a malicious smile on his lips.

Just at this moment the men came with the boat to fetch the coal. They understood all at a glance. Shandon went up to the captain and said :

"Mr. Hatteras, I don't see the use of giving way to despair. Fortunately, we are at the entrance of Barrow Strait, which will take us straight to Baffin Bay."

"Mr. Shandon," replied Hatteras, "fortunately we are at the entrance to Wellington Channel, which will take us straight to the north!"

"And how are we to work the ship, sir?"

"By her sails. We have still fuel for two months, and that is more than enough for our winter's sojourn."

"You will allow me to say—" began Shandon.

"I will allow you to follow me on board, sir!" interrupted Hatteras; and, turning on his heel, he walked off to the boat, and shut himself in his cabin as soon as they reached the brig.

CHAPTER XX

Heavy Work

ON the 3rd and 4th of July the thermometer stood at 57°, and it never rose higher than this during the whole time of the expedition. But on Thursday, the 5th, the wind shifted to S.E., and became very violent, accompanied by whirling eddies of snow. The temperature fell the night before to 23°. Hatteras, without caring about the ill-humor of the crew, gave orders to weigh anchor. For thirteen days, that is to say, since leaving Cape Dundas, the *Forward* had not made one degree farther north. This did not satisfy the money-loving Clifton party at all; and, for the time being at least, they were quite as willing as the captain to try and push their way through Wellington Channel.

This channel was first fully explored in 1851, by Captain Penny, on the whalers *Lady Franklin* and *Sophia*; and it was one of his officers, Lieutenant Stewart, who succeeded in getting as far as Cape Beecher, in latitude 76° 20', and made the discovery of an open sea. An open sea! This was the hope which inspired Hatteras.

"What Stewart found, I shall find, too," he said to the Doctor; "and then we can sail easily enough to the pole."

"But have you no misgivings about the crew?" asked the Doctor.

"My crew!" repeated Hatteras bitterly; but he added presently, in a low voice, as if speaking to himself, "Poor fellows!" The Doctor was amazed, for it was the first time he had betrayed the least kindly feeling. But he had hardly time to recover his surprise before the old hardness came back, and Hatteras exclaimed vehemently: "No! they must and shall go with me!"

The *Forward* found no great difficulty in getting through the ice, for the ice-streams were pretty far apart; but still she made little progress, owing to contrary winds. It was not till the 10th that she passed at

length the 75th parallel, to the great joy of Clifton.

They had now reached the very point where the *Advance* and the *Rescue*, two American vessels in Dr. Kane's expedition, had met with such terrible disasters. Shandon took care to rehearse the whole story of suffering and danger to the crew, with what dispiriting effect may be imagined.

The ice-packs were now very numerous, and navigation became exceedingly difficult. Hatteras endeavored vainly to get past Hamilton Island, but the wind was contrary. Then he tried to glide the brig in between Hamilton Island and Cornwallis Island, and again he failed, after wasting five precious days in the attempt. The temperature was constantly getting lower, and on the 19th of July fell to 26°. It rose somewhat the next day; but this premonition of an Arctic winter's approach was not lost on Hatteras. The wind was inclined to keep steadily in the west, dead against the ship, while he was all impatience to reach the latitude where Stewart had discovered the open sea. On the 19th he determined to go up the channel, come what might. By using the engine, the brig could fight her way against the rough gales of wind and driving snow! but, above all things, the scanty store of fuel must be husbanded. On the other hand, the channel was too wide to permit of "tracking," as it is called in Arctic language—that is, towing with ropes along a margin of ice. Hatteras, therefore, had recourse to a method sometimes adopted by whalers in similar circumstances. Without giving a moment's consideration to the fatigue of his crew, he ordered the boats to be lowered to the level of the water, so as just to touch the surface, though without detaching them from the sides of the ship, to which they were then firmly fastened fore and aft. In these boats the men had to seat themselves in turn, with oars in hand, and row vigorously to drag the vessel forward against the wind.

It was slow work, and one can imagine the labor it was for the crew. But at length, after four days' sailing in this fashion, the *Forward* emerged into Queen's Channel, and reached Baring Island.

The wind was still adverse; but the crew could do no more. Their health was too much shaken, and the Doctor feared he could detect in several the first indications of scurvy. He lost no time in combating the terrible malady, for he had lime juice and lime pastilles in abundance.

Hatteras knew well enough he could no longer count on his men. Mildness and persuasions were of no avail now; he resolved to conquer by severity, and even to show himself pitiless on occasion. Richard Shandon he especially mistrusted, and he had his doubts about James Wall, too. Dr. Clawbonny, Johnson, Bell, and Simpson, he knew were devoted to him, body and soul. Pen, Gripper, Clifton, and Warren, he was quite aware, were only waiting their time to break out in open mutiny, and drag the brig back to England; and the others were ready to take either side at any moment.

Meanwhile, what was to be done? The crew were not only badly disposed, but so exhausted that they could not possibly continue such fatiguing efforts, and

for twenty-four hours they had remained absolutely stationary in sight of Baring Island. And yet the temperature was always getting lower, for it was far on now in July. On the 24th the thermometer fell to 22°. Young ice of considerable thickness formed during the night, and should snow come down, it would soon be firm enough to bear a man's weight. There was a gray, dirty look about the sea, which betokened the commencement of the process of crystallization.

There was no mistaking these alarming symptoms. Should the leads close, Hatteras would be obliged to winter here without having gained his object, or even catching a glimpse of the open basin which was so close at hand, if the reports of his predecessors had been correct. He determined to push forward at all risks, and as he could not use the oars in the present worn-out state of his men, nor the sails, for the wind was contrary, he gave orders to light the furnaces.

CHAPTER XXI Beginnings of Mutiny

THIS unexpected command occasioned great surprise on board the *Forward*, and loud exclamations were heard on all sides. Shandon looked fixedly at Wall, and the engineers stood perfectly stupefied.

"Did you hear me?" shouted the captain in an angry tone.

Brunton moved towards the hatchway, but stopped short again, as a voice called out: "Don't go, Brunton!"

"Who spoke?" exclaimed Hatteras.

"It was I who spoke," said Pen, boldly, going up to the captain.

"And you said——"

"I said and I say," interrupted Pen with an oath, "that we have had enough of this work, that we are not going farther; that we neither intend to be killed with hard work, nor frozen to death in the winter; and that the furnaces shall not be lighted!"

"Mr. Shandon," replied Hatteras, coolly, "lay that man in irons."

"But, captain," objected Shandon, "what the man has said is——"

"Repeat what this man has said, and I'll have you locked in your cabin and guarded. Seize that man! Does no one hear me?"

Johnson, Bell and Simpson went forward; but the infuriated Pen was beside himself. He caught up a handspike, and brandishing it above his head, cried out:

"Touch me who dare!"

Hatteras went right up to him with a loaded revolver, which he aimed at his head, and said quietly: "Lift your finger, and I blow your brains out."

A murmur of disapprobation was heard; but it died away immediately, when Hatteras said: "Silence among you, or he is a dead man."

Pen made no further attempt at resistance, but allowed Johnson and Bell to disarm and lead him away.

"Go, Brunton!" said Hatteras.

The engineer obeyed without further parley, and the captain went directly up to the poop, followed by the Doctor.

As soon as the steam had acquired sufficient pressure, the anchors were lifted, and the *Forward* stood off for Point Beecher, and went towards the east, cutting effectively through the newly formed ice with her sharp prow.

She had to wend her way through narrow channels between numerous small islands. The ice-streams were constantly threatening to unite, summocks had formed here and there already, and it was easy to see that the first frost that set in would consolidate the whole into one impenetrable mass.

Yet every now and then the sun would reappear and chase away the whirling snow, the thermometer would rise several degrees, difficulties would vanish as if by enchantment, and a stretch of clear, open water would greet the eye.

On Thursday, the 26th of July, the brig sailed close past Dundas Island, still keeping her prow steadily towards the north; but almost directly afterwards she came to an enormous bank of ice, eight to nine feet high, composed of small icebergs that had been detached from the coast. There was no getting past it except by making a deep bend out of the course. At last a lead was discovered; but still the *Forward* made slow progress, for the fog came on, and this is a serious obstacle to a sailing vessel among ice. So long as the pilot can see a mile ahead, he can easily steer his way through the packs; but often it is so thick that he cannot see a cable's length before him, and the difficulty was now increased easily a thousandfold by the blinding snow.

The birds were still very numerous, and their cries were deafening; the seals lolling indolently on the drifting floes, betrayed little fear, though they stretched out their necks and gazed with wondering eyes as the vessel passed by.

At length, after six days' wearisome navigation, Cape Beecher appeared to the north. Hatteras betook himself to the mast-head, and remained there for hours; for the open sea discovered by Stewart in May, 1851, could not be far off, and yet no sign of it as yet could be discovered.

He came down again after his long watch without saying a word.

"Do you believe in this open sea?" asked Shandon, speaking to James Wall.

"I begin to have my doubts," was the reply.

"Was I not right, after all, in treating this pretended discovery as a mere chimera? And yet no one would listen to me, and even you, Wall, took the other side of the question."

"They will listen to you now, Shandon."

"Yes, when it is too late," he replied, and retired to his cabin, to which he had confined himself almost entirely since his first and only discussion with the captain.

According to Penny, the sea ought to be quite clear

now, for they had reached Cape Barrow after taking ten days to go thirty miles. What was Hatteras to think?

Was Penny's statement altogether apocryphal, or had winter already set in?

On the 15th of August the snow-covered head of Mount Percy appeared through the fog, and next day the sun set for the first time after a long continuous daylight. However, the darkness which followed was by no means complete; though the sun had set, the refraction of his rays still gave sufficient light.

On the 19th of August, Cape Franklin was sighted to the east, and Cape Lady Franklin to the west; the one doubtless was the extreme point reached by the bold navigator; and the other was so called by his grateful countrymen, in honor of his devoted wife, as a touching symbol of the loving bond that united them so closely.

The Doctor, following Johnson's advice, was trying to inure himself to the cold as much as possible, by remaining nearly always on deck, in spite of wind and snow. His health was unimpaired, though he had grown a little thinner. He was quite prepared for fresh dangers, and gayly welcomed each precursor of winter.

"Look at that flock of birds migrating south!" he called out one day to Johnson. "How swift they fly, shrieking their last adieu as they go!"

"Yes, Dr. Clawbonny, something tells them it is time to go, and off they start."

"More than one among us, Johnson, I wager, would like to follow their example."

"Chicken-hearted fellows!" said Johnson. "Those poor flying things have not their food all ready to hand like us, and of course they must seek it elsewhere. But sailors, with a good ship under their feet, ought to go to the world's end."

"You hope then that Hatteras will succeed in his projects?"

"He will succeed, I'm sure of it, Dr. Clawbonny," answered Johnson.

"I agree with you, Johnson, and even if only one faithful friend remained to him—"

"We should make two."

"You are right, Johnson," said the Doctor, grasping the brave fellow's hand.

Prince Albert's Land, which the *Forward* was now alongside, is also called Grinnel's Land, and though Hatteras so hated the Yankees that he would never have given it that name, most people know it by the American designation. Both names were bestowed on it at the same time, though by different people—Penny in honor of Prince Albert, and Lieutenant de Haven, the commander of the *Rescue*, in honor of Grinnel, the American merchant, at whose expense the expedition had been sent out.

After a succession of unheard-of difficulties, the *Forward* sighted Mount Britannia, though it was scarcely visible through the fog, and next day dropped anchor in Northumberland Bay, and found herself completely closed in on all sides.

CHAPTER XXII Assault of the Icebergs

FTER seeing that the vessel was properly moored, Hatteras withdrew to his cabin and studied his chart attentively. He found he was in latitude 76 degrees 57 minutes, and longitude 92 degrees 20 minutes; in other words, almost upon the 77th parallel. This was where Sir Edward Belcher passed his first winter on the *Pioneer* and the *Assistance* and from this point he organized his exploring parties, and succeeded in reaching the 78th degree. Beyond this he found that the coast inclined to the S. E. towards Jones Sound, which opens into Baffin Bay, but on the N. W. he could discern nothing as far as the eye could see but clear, open water.

Hatteras gazed long and earnestly at the blank white space on the map which represented the unexplored regions around the Pole, and he said to himself:

"After all these testimonies from Stewart, Penny, Belcher, I cannot doubt. The open sea must be there. These bold, hardy men have seen it with their own eyes. Can it be that it was during some exceptional winter, and that now—? but no, that cannot be the case, for several years elapsed between the discoveries. The open sea exists and I will find it, and see it for myself!"

He went again on the bridge, but the ship was wrapped in dense fog, and the mast-head was hardly visible from deck; yet Hatteras made the ice-master come down, and went himself to take his place in the "crow's-nest."

Next morning the fog cleared off for a few minutes, and Hatteras could be seen eagerly scanning the horizon from his elevated position; but he came down without saying a word, and gave orders to sail forthwith. It was easy to tell that his last hope had failed him.

The *Forward* weighed anchor, and once more resumed her uncertain course towards the north. It was evident there would be a general frost before long, for the sea was covered with whitish patches, looking like spots of oil, and whenever the wind fell, the whole surface was speedily covered with a sheet of ice, which broke up, however, and disappeared as soon as the breeze returned. Towards night the thermometer fell to 17 degrees.

Often the leads seemed quite closed; but an unexpected movement of the ice-streams would open the way in some new direction, and the brave vessel would dash in at once and follow it up boldly; but the cold was so intense that during these forced stoppages, the steam that escaped from the valves would condense immediately and fall in snow on the deck. Sometimes there was another cause of delay. The loose ice would get entangled among the blades of the screw and adhere so firmly that the engine was powerless. The sailors had to bring levers and handspikes, and break it away, before the screw could work.

Thirteen days passed thus, during which the *Forward* was dragged wearily through Penny Straits. The crew grumbled, but obeyed, for they saw that going

back was impossible. To go north would be attended with less peril now than to return south: it was time to think of winter quarters.

On the 31st of August the thermometer stood at 13 degrees. The end of the navigable season had arrived.

Leaving Exmouth Island on the right, the *Forward* passed Table Island, into the middle of the Belcher Channel. There was scarcely an inch depth of water now under her keel; and, far as the eye could reach, nothing was to be seen but ice-fields.

Fortunately, it was possible to get a few minutes further north yet, by breaking the young ice with enormous rollers and petards. The great thing to be dreaded in low temperatures is a calm atmosphere, as ice forms so rapidly in the absence of wind. Even contrary winds were joyfully welcomed, but they did not continue long; a calm night came, and all was frozen.

The *Forward* could not winter in such a situation, however, exposed to winds and icebergs, and the currents of the channel; and Hatteras sought to get beyond Cape Albert, where there was a sheltered bay.

BUT, on the 8th of September, they came to a high, impassable wall of ice, which rose between them and the north. The temperature fell to 10 degrees, and Hatteras was almost at his wits' end. He risked his ship a hundred times in impracticable leads, and displayed prodigies of skill in extricating her again. Thoughtless and imprudent, and even blind as he was, no one could deny that he was a good sailor—indeed, one of the very ablest.

The *Forward* was now in a really perilous situation. All was ice behind, and ice of such thickness, that the men could run on it securely and tow the brig along.

Since there was no getting round this wall, Hatteras determined to attack it with his blasting-cylinders. It took the whole of one day to make holes in the ice of sufficient depth, but he hoped all would be ready next morning for the explosion.

However, during the night the wind began to rage furiously. The sea rose under the ice as if shaken by some submarine disturbance; and the terrified voice of the pilot was heard shouting, "Look out at the stern! Look out at the stern!"

Hatteras looked in the direction indicated, and certainly it was an alarming sight that met his gaze. An enormous iceberg, towering aloft like a mountain, was coming rushing towards the ship with the speed of an avalanche.

"All hands on deck!" sang out Hatteras.

The huge moving mass was not more than half a mile distant. On it came, tearing up the floes, crushing and overturning, and sweeping the pack along like grains of sand before the hurricane-blast.

"This is the worst danger that has ever threatened us yet," said Johnson to Dr. Clawbonny.

"Yes, it looks appalling enough, certainly," replied the Doctor.

"It is a regular assault, and we must prepare to meet it," said Johnson.

"I declare, one could fancy it was a whole pack of

antediluvian monsters, such as might be supposed to live about the North Pole. They all seem pushing each other, and hurrying on to see which will arrive first."

"Aye, and some are armed with sharp lances, which I advise you to steer clear of, Dr. Clawbonny."

"It is going to be a regular siege," exclaimed the Doctor. "Come and let us be up on the ramparts."

Away he rushed to the stern, where all the crew were stationed with poles, and iron bars, and handspikes, ready to repel the formidable enemy.

The mass of ice arrived, increasing in height as it came, owing to the accumulation of smaller icebergs it caught up in its train. Cannon-balls were fired, by the captain's orders, to break the threatening line of attack; but it advanced nearer and nearer, and at length dashed against the brig with a tremendous crash, breaking part of the bulwarks.

"Keep to your posts, and look out for the bergs," shouted Hatteras.

There was much need, for they were boarding the vessel with irresistible force: already packs weighing several hundredweight had scaled the sides, while the smaller ones, which had been dashed up in the onset as high as the masts, fell down in a shower of pointed arrows, breaking the shrouds and cutting the rigging. Some of the sailors were sorely wounded by these bristling barbs as they stood, pole in hand, each doing his utmost to repulse their assailants. Among others, Bolton had his left shoulder completely ripped up. The noise was terrible, and to add to it, Duk barked his loudest with rage. The darkness of night greatly increased the horrors of the situation, without hiding from view the angry packs glistening in their dazzling whiteness.

From time to time the voice of Hatteras was heard amid all the din and clamor of this strange, preternatural, impossible contest between men and icebergs. The brig, yielding to the enormous pressure, leaned over to port till her mainyard touched the ice-fields.

Hatteras understood the danger: it was a moment of terrible anxiety, for at any instant the brig might turn over completely, or her masts be torn away.

Presently an enormous mass began to rise at the side of the ship, extending right along her hull. It seemed forced upward by some irresistible power, higher and higher, till at last it was on a level with the poop. Should it fall on the *Forward*, all was over. It turned and stood on end, higher than the tallest mast, and tottered on its base. A cry of terror escaped all lips, and there was a general rush to the other side.

Suddenly the vessel was entirely lifted up, and for a brief space seemed to float in the air. Then she came down again and fell back on the ice, to be caught up next minute in a tremendous roller, which made her timbers shiver, and swept her right over to the other side of the insurmountable barrier, upon an ice-field, into which she sank at once by her own weight, and regained her proper element.

"We are over the wall of icebergs!" exclaimed Johnson.

"Praise God!" said Hatteras.

But though the ice barrier was surmounted, the brig

was absolutely motionless, fast locked in on all sides.

It was soon evident, however, that if the brig was motionless, the field was not, and Johnson called out to the captain:

"We are driving, sir."

"Well, we must just drive!" replied Hatteras.

And, indeed, what else could they do? Resistance was impossible.

The day came, and it was quite clear that, owing to the action of some submarine current, the ice-field was moving rapidly north.

To provide for any possible catastrophe, for the brig might be dashed on some coast or crushed with the pressure of the ice, Hatteras had a great quantity of provisions brought up on deck, together with the tents and all the requisites for encamping, and the clothing and blankets of the crew. Following the example of McClure in similar circumstances, he also encircled the ship with a girdle of hammocks with inflated air mattresses, so as to ward off great seas, and the ice so accumulated on these that there was soon a high wall all around, and nothing of the ship was visible except the masts and rigging.

For seven days they sailed along in this strange fashion. On the 10th of September they caught a glimpse of Point Albert, the western extremity of New Cornwall. But they soon lost sight of it, as the ice-field began now to move in an easterly direction. Where could it go, and where would it stop? Who could say.

The crew waited with folded arms. At last, on the 15th of September, about three in the afternoon, the ice-field came into collision, no doubt, with another field, for it stopped suddenly short, and a violent shock shook the vessel to her center. Hatteras, who had taken his bearings during the day, consulted his chart. He found himself in the north, with no land in sight, in longitude 95 degrees 5 minutes, and latitude 78 degrees 15 minutes, in the heart of that unknown sea, where geographers have placed the point of greatest cold.

CHAPTER XXIII Preparations for Wintering

THE average temperature of the regions in which Hatteras found himself was 15 degrees lower than any other part of the world. He was two hundred and fifty miles, by his reckoning, distant from the last point of known land—that is, from New Cornwall—and his ship was fast locked in ice, as if embedded in granite.

It was a terrible situation to be in, and he knew what a fearful winter he would have to go through, with a brig in such a position and a half-mutinous crew. But his courage rose to meet the danger, and he lost no time in commencing preparations for winter quarters, aided by the long experience of Johnson.

Far as the eye could see, there was nothing but ice; not a drop of water was visible in all the region. But the surface of the ice-fields was by no means smooth and uniform. Numerous icebergs raised their towering heads round the ship, forming such a belt, that on three sides she was completely sheltered from the wind, and

only the southeast wind could blow on her. If one could only suppose rocks instead of icebergs and verdure instead of snow, and the sea in its normal condition, the *Forward* would have been lying in a pretty sheltered bay. But what a dismal prospect met the gaze!

The pressure of the ice was so great, that it became necessary to cut it away all round the ship. The packs had accumulated on her sides, and weighed her down beyond her usual floating line. It was a tedious, difficult progress, occupying several days; but when at length the hull was released, the brig rose at once nine inches. Hatteras thought it advisable to take the opportunity of examining it thoroughly, while it was exposed. Thanks to the solidity of its construction, it was found to be quite uninjured.

The next business was to slope away the ice right along the hull, following the outline of the ship. By doing this, the ice-field united again under the keel and prevented all further pressure.

The Doctor lent a helping hand in all these operations, infecting the men with his own good-humor, and getting and giving information. He heartily approved of this adjustment of the ship.

"There is no other way of resisting the pressure, sir," said Johnson; "now we can build a wall of snow all around as high as the gunwale, and make it ten feet thick, if we like, for we have no lack of material."

"Capital!" said Dr. Clawbonny; "for snow is a non-conductor of caloric. It reflects instead of absorbs, and will prevent the internal heat from escaping."

"Yes, sir, and we not only fortify ourselves against the cold, but against four-footed enemies. We'll make a famous job of it, and so you'll say when our work is finished.

"There will be two flights of steps outside the ship—one fore and one aft. As soon as the steps are cut, we shall pour water over them, and this will make them as hard as a rock, and we shall have stairs fit for a king."

Before long the whole vessel had disappeared beneath a thick coating of ice. A roof made of tarred canvas was spread over the decks the entire length of the ship and hanging down the sides. This was covered with snow, to prevent any external cold from penetrating. The deck was thus converted into a promenade, also covered with snow two and a half feet thick, well beaten and trodden down to make it as hard as possible. Over this a layer of sand was sprinkled, which became speedily incrusted, and gave the deck the appearance of a macadamized road.

"I shall soon fancy myself in Hyde Park," said the Doctor; "or in the hanging-gardens of Babylon."

At a convenient distance from the ship a fire-hole was made; that is to say, a well was dug in the ice, to provide a constant supply of water, a very necessary measure both for the frequent baths ordered the crew and in case of fire breaking out on board. This well was dug as deep as possible, as the water is not so cold as near the surface.

The interior of the vessel was arranged with a view to ward off the double danger of the Arctic regions—cold and damp.

The first brings the second—even more to be dreaded. The *Forward* being constructed especially for the expedition, was admirably adapted for the purpose. The forecastle was wisely planned, and oakum had been successfully caulked into the corners where damp first crept in. It would have been better if the men's room had been circular, but still, with a good fire in the stove, it was very comfortable. The walls were hung with deers' skins, instead of anything woollen, as wool catches every vapor, and by the condensation, impregnates the atmosphere with humidity.

The partitions were taken down in the poop, and the officers had one common room larger and more airy than the forecastle, and also heated by a stove. Both it and the men's room had a sort of ante-chamber, which cut off all direct communication with the exterior. This prevented the heat from escaping, and made a gradual passage from one temperature to another.

A proper provision was made for the admission of air into the stoves and the fires were carefully regulated. The temperature was kept up at 50 degrees, and the smallest possible amount of coal used, for Hatteras found, on inspecting the bunkers, that, with the severest, most rigid economy, he had only enough for two months longer.

A drying-place was contrived for such clothing as had to be frequently washed, for nothing could be dried in the open air.

The delicate parts of the engine were carefully removed, and the engine-room hermetically closed.

The regulation of the ship life was a matter of serious consideration to Hatteras. At six the men rose, and three times a week their hammocks were carried out into the fresh air. Every morning the planks of the two living rooms were rubbed with hot sand. Boiling tea was served up at each meal, and as much variety as was practicable was introduced in the daily bill of fare. The dietary scale included bread, flour, suet, and raisins for puddings; sugar, cocoa, rice, lemon-juice, preserved meat, salt pork and beef, pickled cabbage, and mixed pickles. The kitchen was outside the living rooms; it would have been an addition to the heat to have placed it inside, but the cooking of food is a constant source of evaporation and moisture, so that it would have been a doubtful benefit.

Health is greatly dependent on food, and in high latitudes as much as possible of animal substances requires to be consumed.

"We must take example by the Esquimaux," said the Doctor; "they have been taught by nature, and are apt scholars. Arabs and Africans can live on a few dates and a handful of rice, but here it is important to eat much. An Esquimaus absorbs daily from ten to fifteen pounds of oil. If his fare would not meet your taste, you must replace it by substances which abound in oil and sugar; in a word, you must have carbon and burn carbon. It is all well enough to put coals in the stove, but we must not forget we have a stove inside us which needs replenishing."

The most scrupulous cleanliness was also rigidly enforced. Each man was obliged to take a bath of the

icy water every other day as a matter of health, and also as an excellent means of preserving natural heat. The Doctor himself set the example.

The men had to be on their guard not to get frost-bitten when they were out of doors shooting, or working or exploring. In the event of this happening, however, the frozen part was briskly rubbed with snow till circulation was restored. The clothing of the men was also carefully attended to; they were all wrapped in flannel, and wore deerskin capes and sealskin trousers.

The making of these several arrangements occupied three weeks, and the first of October arrived without any particular occurrence to record.

CHAPTER XXIV

An Old Fox of the James River Expedition

THE thermometer fell lower daily. There was little or no wind, and the weather was tolerably fine. Hatteras took advantage of the clear atmosphere to go out and reconnoiter. He climbed the highest iceberg he could find, but, as far as he could see, and aided by the glass, nothing was visible but mountains and plains of ice. All was dreary chaos, and he went back on board to try and reckon the probable length of his captivity.

The hunting party, including the Doctor, James Wall, Simpson, Johnson, and Bell, kept the ship in fresh meat. All the birds had disappeared except the ptarmigans, but these were in such abundance and so easily shot that there was no fear of the supply being exhausted.

Hares, foxes, ermines, wolves, and bears were also to be found, but the latter were so ferocious that it was not easy to get near them; and, besides, when they had put on their winter coats it was hard to distinguish them from the snow, as they then become spotlessly white.

Seals of every variety were also frequently met with. It was a great object to kill these, not only for their skins, but their fat, which is an excellent combustible. Their liver is also good food, if nothing better can be had. Sometimes they could be counted by hundreds, and two or three miles away from the ship the ice was bored all over with their breathing holes; yet they were very difficult to secure, and many were wounded that succeeded afterwards in making their escape below the ice.

However, on the 19th, Simpson managed to get hold of one not far from the ship. He had taken the precaution to stop up its holes, so that it was at the mercy of the hunters. After a long struggle the animal was dispatched; it measured nine feet, and was a magnificent specimen. The doctor, wishing to preserve the head for his museum of natural history and the skin for future needs, prepared both, by a cheap and easy method. He plunged the body in the firehole, and allowed the myriads of shrimps and prawns to eat away the flesh. In half a day the operation was complete, and no tanner in Liverpool could have done it better.

As soon as the sun had passed the autumnal equinox, the Arctic winter may be said to begin. From the 23rd of September the sun begins to descend below the horizon, and on the 25th of October it disappears alto-

gether, and does not return till the month of February.

We must not imagine, however, that the darkness is total during the sun's long absence. The moon does her best to replace him, and the stars shine their brightest. The planets are peculiarly resplendent, and the *aurora borealis* is a frequent phenomenon, so that there is a sort of twilight for several hours every day, except when fog and snow wrap the whole region in gloomy night.

Meantime, however, the weather was favorable. No one had any reason to complain of it, except the ptarmigans and the hares, and the hunters positively allowed them no rest. They also set fox-traps, but the wary animals would not allow themselves to be caught. They often even scratched up the snow under the trap and devoured the bait, and came off scot free.

On the 25th of October a hurricane of extreme violence broke loose; thick snow filled the air, and made pitch darkness about the *Forward*. For some hours great anxiety was felt on board about Bell and Simpson, who were out hunting. They did not reach the ship till next day, after being buried in snow five feet thick for twelve hours. They had wrapped themselves in their deerskins and lain down, letting the hurricane sweep over their heads till they were almost frozen, and could hardly get back to their quarters. The Doctor had great difficulty in restoring the circulation.

The storm raged for eight days without ceasing; no one stirred out.

During this compulsory leisure each man lived apart, as it were, some sleeping, others smoking, and certain individuals talking together in a low voice, but breaking off the conversation if Johnson or the Doctor came near; there was no bond of union among them. They never assembled together for anything but evening prayers, and on the Sundays for divine service.

Hatteras remained almost invisible; he neither took part in hunting nor walking; he showed no interest in any of the meteorological phenomena which so excited the wondering admiration of the Doctor. He lived for one single idea; three words will tell it—the north pole. He was only thinking of the time when the *Forward* would be released from her imprisonment.

The Doctor employed himself in arranging his notes, of which this narrative is the reproduction. He was never idle, and his even temper never failed him; but for all that he was glad enough when the storm was over.

On the 3rd of November he set out with Johnson and Bell about six in the morning. The ice-fields were smooth, and the snow, which lay so thick on them, was firm and hard beneath their tread. The weather was cold and dry; the moon shone with incomparable brilliancy.

The Doctor had brought his friend Duk with him; he was much more serviceable in hunting than the Greenland dogs, who seem to possess none of the sacred fire of the race inhabiting temperate zones. But, in spite of all his cleverness in scenting game and running it down, the hunters had not found so much as a hare after two hours' walking.

"I suppose all the game has fled south," said the Doc-

tor, stopping short at the foot of a little hummock.

"It certainly looks like it," rejoined Bell.

"I don't think that's it," said Johnson; "hares, and foxes, and bears are made for this climate. In my opinion it is the hurricane that has caused their disappearance, but the south winds will soon bring them back. If you were speaking of reindeer or musk oxen, it would be quite a different thing."

"And yet on Melville Island there are troops of those very animals," said the Doctor. "Certainly it lies a little further south, but when Parry wintered there he found them in abundance always."

"We are not quite so well off," said Bell; "yet if we could only lay in a store of bear's flesh, we should not have much to complain of."

"Bell talks of bear's flesh," said Johnson, "but we want his fat far more just now than even his flesh or fur."

"You are right, Johnson; you are always thinking about the stores," replied Bell.

"No wonder," returned Johnson, "when the bunkers will be empty in at least three weeks, even with the utmost economy."

"Yes, that's our greatest danger, for this is only the beginning of November, and February is to come yet, the coldest month in the year in this zone. Well, if we can't get bear's grease, we can always get seal's fat, at any rate."

"Not for long, Dr. Clawbonny," replied Johnson; "these animals will soon cease to show themselves above the ice, either owing to fear or to the increasing cold."

"Then, after all," said the Doctor, "we shall have to fall back on the bear, and certainly he is the most useful of all the Arctic animals, for we can get food and clothing, and light and fire out of him. Listen, Duk," he continued, patting the dog, "we want a bear, old boy! Go and fetch him; there's a good old fellow!"

DUK, who had been scenting along the ice all the time, darted off like an arrow, barking vociferously. The hunters followed, but, though they could hear him still distinctly, they had to go a full mile before they came up to him. They found him standing on a little hill, on the top of which some enormous creature was moving about.

"We've got our wish for the asking," said the Doctor, loading his gun.

"Aye, it is a bear, and no mistake, and a jolly big one, too," said Bell, imitating the Doctor's example.

"I don't know, it is a strange sort of bear," added Johnson, preparing to fire after his companions.

Duk was barking furiously. Bell advanced within twenty feet and fired; but the ball took no effect.

Johnson's turn came at last, but his ball was powerless like the others.

"I see how it is!" exclaimed the Doctor; "it is that confounded refraction again, one never gets used to it. Why, that bear is more than a thousand paces off."

"Let us go nearer then," replied Bell.

Away rushed all three towards the animal, who did not appear the least disturbed by their shots.

As soon as they were at the right distance they fired again, and the bear gave one tremendous spring and fell at the foot of the hill mortally wounded, there was no doubt.

Duk rushed upon him tooth and nail, holding him fast.

"Well, it hasn't been much trouble to kill that bear, anyhow," said the Doctor.

"Three shots and he is done for," exclaimed Bell, contemptuously.

"It is very strange!" said Johnson.

"Unless we have chance to come just at the very moment he was dying of old age," suggested the Doctor, laughing.

"My word, it is little matter whether he is young or old. It is a lucky prize for us."

But what was their blank amazement on reaching their victim to find that it was a white fox instead of a bear!

"Well, I declare," said Bell, "if that's not too bad!"

"Yes, I think so," replied the Doctor. "To kill a bear, and then pick up a fox."

Johnson stood stupefied, not knowing what to say.

At last the Doctor burst out laughing again, and said:

"It is just the refraction, that everlasting refraction!"

"Well, we'll eat him anyhow, whether it is a bear or fox. Let us carry him off.

But just as Johnson was about to throw him over his shoulders, he stopped short and said:

"Here's something stranger still!"

"What's that?" asked the Doctor.

"Look here, Dr. Clawbonny. The beast has a collar round his neck."

"A collar!" exclaimed the Doctor, bending down to examine the animal.

Sure enough there was a brass collar half worn away round his neck, peeping through his white fur. The Doctor fancied he could perceive an inscription on it, and pulled it off to make a closer inspection.

"What does it say?" asked Johnson.

"It says that this fox is at least twelve years old, a fox caught by James Ross in 1848."

"Is it possible!" exclaimed Bell.

"There is not the least doubt of it. I am only sorry we killed the poor beast. While James Ross was wintering here, he snared a great quantity of white foxes, and had brass collars riveted on their necks, with the name and whereabouts of his two ships, the *Enterprise* and *Investigator*, inscribed on it, and also where the provision depots were to be found. These animals roam great distances in quest of food, and Ross's idea was that some of them might fall into the hands of Franklin's party. And now, instead of that, we have shot him with our balls, when he might have saved the lives of two ships' crews."

"We won't eat him, at any rate," said Johnson; "and besides, he is twelve years old. We'll keep his skin though, as a memento of this curious adventure."

Throwing the dead fox across his shoulder, and followed by his two companions, Johnson began to retrace his steps toward the vessel, guided by the stars. Their

expedition had not been altogether unsuccessful, for they managed during the homeward route to bring down several brace of ptarmigan.

CHAPTER XXV The Last Bit of Coal

THE bears appeared absolutely impregnable; not one was taken. Indeed, nothing was killed except a few seals, and then the wind changed and the snowfall became so violent that it was impossible to leave the ship.

On the 15th of November the thermometer fell to 24 degrees below zero. This was the lowest temperature they had hitherto experienced, yet with a calm atmosphere the cold would have been bearable, but the stormy wind that blew seemed to fill the air with sharp lancets.

Even had it been possible to venture out, the least exercise would soon have made a man pant for breath. Not a fourth part of the usual work could be done by the crew, and woe to the hapless individual who was incautious enough to touch anything made of iron. He felt as if he had been suddenly burnt, and the skin was torn off his hand, and remained sticking to the article he had so imprudently grasped.

The only relief to the close confinement was a daily walk of two hours on the covered-in deck, and the permission to smoke, which was not allowed down below.

The stoves had to be carefully attended to, for if the fires got the least low, the walls became covered with ice, and not only the walls, but every peg, and nail, and inch of metal.

The instantaneousness of this phenomenon astonished the Doctor. The breath of the men seemed to condense in a second, and leap, as it were, from fluid to solid, falling in snow all round them. Only a few feet away from the fire the cold was felt in all its intensity, and it was little wonder that the poor shivering fellows huddled round the stove.

Yet the Doctor counseled them wisely to try and get intired to the temperature by gradually exposing themselves to its influence. But his advice was in vain, though he practiced what he preached. The men were nearly all too lazy or too benumbed to leave their post, and preferred sleeping away their time in the warm unwholesome atmosphere.

As for Hatteras, he seemed not to feel the change in the temperature. He walked about as usual in perfect silence, and would be absent from the ship for hours, and return, to the astonishment of his crew, without a sign of cold on his face. What was the secret of this? Was he so wrapped in one idea?

"He is a strange man!" said the Doctor to Johnson. "He amazes even me; he has a blazing fire inside him!"

"It is a positive fact," replied Johnson, "that he goes about in the open air with not a stitch more clothing than he wore in the month of June!"

"Oh! as far as clothes are concerned, that is nothing; what's the good of wrapping up a man who has got no heart in himself? You may as well try and warm ice by putting it in a blanket. Hatteras does not need that; he is so constituted that really I should not be astonished

to see things catch alight that come near him, as if they had touched glowing coal!"

On the 28th the thermometer fell to 32 degrees below zero. There was only enough coal to last ten days longer.

Hatteras dispensed now with the fire in the poop, and shared the common room of the men with Shandon and the Doctor. This brought him into more direct contact with his crew, who bestowed on him sullen, scowling glances. He heard their reproaches and recriminations, and even threats, without daring to punish. Indeed, he seemed deaf to all that was spoken, and sat in a corner away from the fire, with his arms folded, in perfect silence.

In spite of the Doctor's advice, Pen and his friends refused to take the least exercise. They spent whole days crouching over the stove, or in their hammocks rolled up in the blankets, and the consequence was that their health gave way, and scurvy, that terrible disease, made its appearance on board.

The Doctor had been dealing out lemon-juice and lime pastilles every morning for a considerable time, but these usually efficacious remedies had no apparent effect. The malady ran its course, and soon assumed the most frightful forms.

What a sight the unhappy sufferers presented! Their legs swollen to an enormous size, and covered with large dark-blue spots; their gums bleeding, and lips so tumid, that articulation was almost impossible.

Clifton was first attacked by the cruel malady, and he was soon followed by Gripper, Brunton, and Strong. Those who escaped were forced to witness the sufferings of the others, for there was but one living room, and this had to be forthwith turned into a hospital, as within a few days thirteen out of the eighteen men, which composed the crew of the *Forward*, were confined to their hammocks. Pen was not attacked, thanks to his vigorous constitution. Shandon exhibited a few premonitory symptoms, but he succeeded in warding these off by exercise and regimen.

The Doctor attended his patients with unremitting care, and his heart was often wrung with the sight of pain he could not relieve. He did all he could to raise the spirits of the dejected men, and by conversation and sympathy, and ingenious devices, to lighten the monotony of their long, weary days. He read aloud, and drew largely on the stores of his wonderful memory for their amusement; but often and often his stories would be interrupted by a groan or moaning cry from one or other, and he would have to break off, and try anew all the resources of his healing art.

Meanwhile, his own health remained unimpaired. He became no thinner, and his corpulence was better than the warmest clothing. He often congratulated himself on being like the seal and the whale, so encased in good thick fat that he could easily bear the rigors of an Arctic winter.

Hatteras, for his part, felt nothing, either mentally or physically. The suffering of his men seemed not to touch him in the least, though, perhaps, he would not allow his emotion to appear, and a close observer might have discovered a humane heart beating under that iron

exterior. The man seemed a prodigy of hardness.

The thermometer fell still lower; the deck was quite deserted except by the Esquimaux dogs, who kept howling piteously. The 8th of December arrived, and the Doctor went out as usual to look at the thermometer. The mercury was frozen—completely frozen!

"Fourty-four degrees below zero!" he exclaimed, in dismay. And on this very day the last atom of coal was thrown into the stove.

CHAPTER XXVI

Christmas

FOR a moment despair gained the upper hand, and death seemed staring the unhappy crew in the face—death from cold. The fire got lower each moment, and the effect was soon felt on the temperature of the room. Johnson went to fetch some of his new combustible, and filled the stove with it, adding tow impregnated with frozen oil, which speedily gave out abundant heat. True, the stench was unbearable, and the boatswain was sufficiently convinced that his substitute for coal would find no favor in the middle class houses of Liverpool. It was this fat or nothing.

"And yet," said Johnson, "this stinking stuff may bring us some good after all."

"How's that?" asked the carpenter.

"It will be sure to attract the bears. They will think it a most savory odor."

"Well, but I don't see what we want with bears," replied Bell.

"Friend Bell," returned Johnson, "we can't reckon on any more seals; they have taken their departure for a long time, and if the bears don't furnish their share of combustible material, I don't see what is to become of us."

"You are right, Johnson. We are in a perilous situation—it is frightful to think of it. Only suppose our stock of this fat coming to an end! I see no way, I must confess!"

"Except one."

"And what is that?" asked Bell.

"Except one, Bell, but the captain would never consent to it; and yet it may come to that," added Johnson, shaking his head, for he knew he had only fat enough to last a week.

The old sailor was right. Several bears were seen to leeward, and the few men that remained well gave them chase. But these animals are endowed with such remarkable swiftness and such cunning, that it was found impossible to get near them, and not a single ball took effect.

The crew of the brig were certainly in a serious plight. Forty-eight hours without fire in such a temperature would seal their doom.

At last, on the 20th of December, about 3 P. M., things came to a crisis. The fire burnt out, and the sailors stood around the stove gazing at each other with wild, haggard faces. Hatteras remained motionless in his corner. The Doctor paced up and down in an agitated manner, at his wits' end to devise some expedient.

But others acted for him now. Shandon, cool and de-

termined, and Pen with flashing angry eyes, and two or three of their comrades who were still able to drag themselves along, went towards Hatteras.

"Captain," said Shandon.

But Hatteras, buried in thought, did not hear him.

"Captain!" he said again, touching his hand.

"Sir!" said Hatteras, starting up.

"Captain, we have no fire."

"Well," replied Hatteras.

"If it is your intention to let us perish with cold," said Shandon with terrible irony, "perhaps you will be kind enough to inform us."

"My intention," replied Hatteras in a grave tone, "is that each man shall do his duty to the end."

"There is something higher than duty, captain—the right of self-preservation. I tell you again we have no fire, and if we don't get one, not a man among us will be alive in two days' time."

"I have no wood," said Hatteras in a hollow voice.

"Very well," exclaimed Pen, passionately; "when people have no wood, they must go and cut it down where it grows."

Hatteras paled with rage, and said:

"Where may that be?"

"On deck," was the insolent reply.

"On deck!" repeated the captain, clenching his fist, his eyes sparkling with indignation.

"Certainly," returned Pen; "when the ship can't sail, burn her."

Hatteras lifted a hatchet when Pen began to speak, and swinging it over his head, would have killed him on the spot, had not the Doctor rushed forward and pulled him aside by main force.

Johnson, Bell, and Simpson gathered round Hatteras, determined to support his authority, but plaintive moans rose from the sick-beds, and feeble voices asked for fire.

Hatteras had a struggle to command himself sufficiently to speak, but after a few minutes, he said, in a calm tone:

"If we destroyed the ship, how could we get back to England?"

"Perhaps, sir, we might burn those parts that are not absolutely necessary, such as the gunwale," suggested Johnson. "We should always have the boats to fall back upon," said Shandon; "and, moreover, what is there to hinder us from building a smaller ship out of the remains of the old one?"

"Never!" replied Hatteras.

"But sir—" began several voices at once.

"We have a great quantity of spirits of wine on board," said Hatteras. "Burn it all to the last drop."

"Well, go and fetch the spirits of wine, my men," said Johnson.

By steeping large wicks in this inflammable liquid a pale flame was soon visible in the stove, and the temperature of the room was raised a little.

During the next few days the wind was south, and the thermometer rose a few degrees. Some of the sailors ventured out again for a few hours, but ophthalmia and scurvy kept the greater part on board still close prisoners.

But the respite was of short duration, and on the 25th

of December, the mercury was again frozen in the tube.

By means of an alcohol thermometer, however, the Doctor discovered to his horror that the temperature was 66 degrees below zero. He had not thought it possible that life could be sustained under such conditions.

The ice lay glittering on the flooring, and a thick fog filled the room, mingled with the snow caused by the condensation of the breath of the inmates. The men could hardly see one another; hands and feet had become almost dead and quite blue. The first symptoms of delirium appeared, and the tongue lost the power of articulation.

From the day that Pen had threatened to burn the ship, Hatteras remained on the bridge for long hours mounting guard over his treasure: for this wood was like his own flesh, and he would as soon have thought of cutting off a limb as cutting off an inch of it. There he stood, completely armed, and wholly insensible to cold and snow, though the frost had stiffened his clothes, and encased him in an icy covering. Duk always accompanied him, barking and howling.

On the 25th of December, however, he went below for a while, and the Doctor, summoning all his remaining strength, went up to him directly and said:

"Hatteras, we are dying for want of fire."

"Never!" said Hatteras, understanding the unuttered request.

"It must be done," replied the Doctor, gently.

"Never!" repeated Captain Hatteras even more vehemently; "never will I consent. Let them disobey if they choose!"

Johnson and Bell needed no further permission, but rushed on deck, hatchets in hand. Hatteras heard the wood falling beneath their strokes, and wept.

And this was Christmas Day, so dear to English hearts! the day of family gatherings, when children and children's children cluster so joyously about the fireside. What a bitter contrast this to those festive hours.

However, the fire soon made its reanimating influence felt, and steaming bowls of tea and coffee lend their aid in restoring the benumbed men to some degree of physical comfort, and even revived the dying hope in their hearts.

The 1st of January was marked by an unexpected discovery. The weather was mild, and the Doctor had resumed his usual studies. He was reading Sir Edward Belcher's "Narrative of his Polar Expedition," when he came across a passage he had never noticed before. He read it over and over again, to satisfy himself it was no mistake.

Sir Edward stated that after reaching the end of the Queen's Channel, he met with traces of human habitation on the shore.

"'We found the remains,' he said, 'of dwellings far superior to any of those which would be inhabited by wandering tribes of Esquimaux. The walls had good foundations, and there was a paved space, covered with fine gravel. We saw a great quantity of bones of reindeer, and walrus, and seals. *We found coal there!*'"

As the Doctor read these concluding words, an idea crossed his mind, which he determined to communicate to Hatteras forthwith.

"Coal, did you say!" exclaimed the captain, when he told him of his discovery.

"Yes, Hatteras, coal! that's to say, our means of salvation."

"But coal on this barren coast," returned Hatteras. "No, that's not possible!"

"Why doubt it, Hatteras? Belcher would never have stated the fact if he had not seen it with his own eyes!"

"Well, granting it to be true, what then, Doctor?"

"We are not more than a hundred miles from the place where Belcher saw this coal; and what's an excursion of a hundred miles? Nothing. Much longer journeys have often been made over the ice in quite as cold weather as this."

"We will go!" exclaimed Hatteras, clutching eagerly at the forlorn hope.

Johnson was speedily informed of the project, which met his hearty approval. He communicated the news to the rest.

"Let them go," whispered Shandon, mysteriously.

But before ever commencing preparations for departure, Hatteras took the utmost pains to calculate the exact position of the *Forward*. This was a matter of the utmost importance, for otherwise it would be impossible to find the ship again after once leaving her. After much difficulty he succeeded in making an accurate reckoning, and went down again to compare it with his chart.

For a minute he looked as if stupefied, and then asked the Doctor if he knew the exact latitude when they had taken up winter quarters.

"Of course I do," was the reply. "It was 78 degrees 15 minutes latitude, and 95 degrees 35 minutes longitude.

"Well, then," returned Hatteras, in a low voice, "our ice-field is drifting, we are two degrees farther north, and more to the west, and three hundred miles at least from your coal depot!"

"And these poor fellows are not aware of it!" exclaimed the Doctor.

"Hush!" said Hatteras, laying his finger on his lips.

CHAPTER XXVII

Preparations for Departure

CAPTAIN HATTERAS would not acquaint his men with the discovery he had made, and he was right, for there was no knowing into what excesses despair might have led them, had they felt themselves thus irresistibly dragged farther north.

To himself, however, the knowledge of the fact afforded the greatest joy.

By getting nearer the Pole, the *Forward* had got farther away from the coal-bed mentioned by Sir Edward Belcher, and instead of a hundred miles, it would be necessary to go back at least two hundred and fifty miles. However, after a short consultation with Clawbonny and Johnson, it was resolved to adhere to the project.

They reckoned that the journey would take forty days at the outside, and Johnson undertook to provide all that was necessary.

His first care was the sled, which was of Greenland

make, thirty-five inches wide and twenty-four feet long, made of long planks bent up back and front, and stretched in the form of a bow by strong ropes to give it elasticity. This sled would run easily over hard ice, but in snowy weather wooden runners were added, which lifted it a little above the ground. To make it glide along still more smoothly, the bottom was rubbed over, in Esquimaux style, with a mixture of sulphur and snow.

Six dogs were selected as steeds for this equipage —strong, hardy animals, in spite of their lean, skinny appearance, and able to drag 2,000 pounds weight without being over fatigued, and the harness was in good condition.

For camping, a tent was provided, in the event that they would be unable to construct a snow hut; also a large Mackintosh sheet to spread over the snow, to prevent it from melting by contact with the body; several woolen blankets and buffalo skins, and the Halkett-boat; and powder, shot and two-barreled guns.

The stores consisted of five cases of pemmican, weighing about 450 pounds; twelve gallons of spirits of wine, tea, and biscuit; together with a little "portable kitchen." Each man, following Captain Parry's example, was provided with an india-rubber belt, in which tea, coffee, and water could be carried, and kept in a liquid state by the heat of the body, accelerated by the motion of walking.

Johnson bestowed special pains on the manufacture of the snow-shoes. These were made of wood, and strapped with leather. They served the purpose of skates, but, where the ground was very hard and slippery, deer moccasins were better, and each member of the party was therefore furnished with two pairs.

These important preparations occupied four whole days. Every morning Captain Hatteras reckoned his exact position, and found that the ice-fields had ceased moving. It was absolutely necessary to ascertain this for the sake of returning.

Whom to choose for the expedition was the next consideration. This was a matter of deep thought to Hatteras, for many of the men were useless to take; and yet would it be wise to leave them behind? However, since the lives of all depended on the success of the enterprise, he finally decided to take none with him but tried and trusty followers.

Shandon consequently was excluded, but he showed no regrets on that score. James Wall was out of the question, for he could not rise from his hammock.

None of the sick men were getting worse, happily, and as their treatment consisted mainly in constant friction and large doses of lemon-juice, the Doctor's presence was not required. He therefore resolved to head the party, and no one made the faintest protest against his decision.

Johnson was most desirous to accompany the captain in his perilous undertaking; but Hatteras took him aside, and in an affectionate, almost agitated manner, said:

"Johnson, I have no confidence in anyone but yourself, you are the only officer to whom I can entrust my ship. I must know you are here to watch Shandon and the others. Winter has them fast in iron chains, but

who knows what wickedness they may be capable of? You shall be furnished with formal instructions to assume command if necessary. You will be my second self. Our absence will extend to four or five weeks at the most, and I shall be easy in having you here while I am obliged to be away. You must have wood, Johnson, I know, but as much as possible spare my poor ship."

"I will remain here since it is your wish," said the old sailor.

"Thank you!" said Hatteras, grasping his hand warmly. Then he added: "If you do not see us come back, Johnson, wait till the ice breaks up, and try to push farther towards the Pole; but should the others oppose this, don't think of us at all, but take the ship back to England."

"Is this truly your will, captain?"

"My absolute will," replied Hatteras.

"Your commands shall be obeyed," said Johnson simply.

The Doctor felt the loss of his old friend, but he knew Hatteras had decided for the best.

The two others chosen were Bell and Simpson. Bell was in good health, and a brave, devoted fellow, and would be most useful in putting up the tent, and making snow-shoes. Simpson was a man of softer mould, but he was willing, and might be serviceable in hunting and fishing.

Thus, then, the detachment consisted of Hatteras, Clawbonny, Bell, Simpson, and the faithful Duk—four men and seven dogs.

During the first few days of January, the temperature remained on the average of 33 degrees below zero. Hatteras eagerly watched for a change of weather, and often consulted the barometer: but in these high latitudes no reliance can be placed on any barometer. When it is high, it often brings snow and rain, and when it is low, fine weather.

At last, on the 5th of January, an east wind brought a temporary rise of 15 degrees in the temperature, and Hatteras resolved to start next day. He was impatient to be off, for he could not bear to see the brig cut to pieces before his eyes. The entire poop had already gone to feed the stove.

On the 6th, therefore, the order to set out was given. The Doctor gave his last injunctions to his patients, and Bell and Simpson shook hands silently with their comrades. Hatteras was about to bid his men "good-by" aloud, but black scowling looks met him on all sides, and he fancied a mocking smile lurked on Shandon's lips. He was silent, and perhaps for an instant hesitated about leaving; but it was too late now to alter his plans. The sled was packed and harnessed, and Bell had already gone on. The rest of the party followed, and Johnson accompanied them for about a quarter of a mile. Hatteras would not allow him to go farther.

CHAPTER XXVIII

Across the Ice-Fields

THE little band of adventurers went on towards the southeast. Simpson managed the sledge, aided zealously by Duk. Hatteras and the Doctor

brought up the rear, and Bell was the scout in advance.

The rising of the thermometer announced an approaching snow storm, which soon began and greatly increased the difficulties of the way. The surface of the ice was very uneven and rugged, and the dogs were constantly stumbling, at great risk of overturning the sled.

Hatteras and his companions wrapped themselves closely in their skin clothing, of rude Greenland make, somewhat unshapely, but admirably adapted to the necessities of the climate. The hoods were drawn right over head and face, and nothing left exposed but eyes, nose and mouth.

They walked along over the monotonous plain almost in silence, for it was torture to open the mouth: sharp crystals formed immediately between the lips, which even the warm breath was powerless to melt.

At mid-day Hatteras made a halt for breakfast, which consisted of pemmican and hot tea, and glad enough were the poor travelers of the reviving beverage.

After resting an hour, the march was resumed, and by night they had gone about twenty miles. Men and dogs were tired out; but in spite of fatigue, a snow-hut must be built before they could lie down to sleep. This was an hour and a half's work. Bell showed great skill in cutting the blocks and laying one above another in a circular dome-like form. The snow served for mortar to fill up all interstices, and became so hard that the whole hut soon appeared as if made of one solid piece. The only entrance was a narrow opening, into which they had to crawl on all-fours. The Doctor squeezed in somehow, though it was rather a tight fit, and the others followed. The portable kitchen was lighted, and supper speedily prepared.

When the repast was over, the mackintosh was spread on the ground, and shoes and socks put to dry by the little spirit stove, and then three of the party wrapped themselves in their warm blankets and went to sleep, leaving the fourth man to keep watch and prevent the opening from getting stopped up. This was necessary for the safety of the rest, and each man had charge in his turn.

Duk shared his master's quarters. His brethren were outside, and found a bed for themselves among the snow.

Sleep soon came to the weary men, and at 3 A. M. the Doctor rose to mount guard. He could hear the storm raging without, but within the hut the temperature was tolerably comfortable.

Next morning at six o'clock the monotonous march began once more. It was easier walking, however, for the snow had hardened. They often came across what looked like cairns, or possibly Esquimaux hiding-places, and the Doctor could not rest easy till he had demolished one; but, to his disappointment, he found it was nothing but a block of ice.

"What did you hope to find, Clawbonny?" asked Hatteras. "Are we not the first that have ever trod this ice?"

"Likely enough, and yet who knows!"

"Don't let us waste time in useless searches," re-

turned the captain. "I am in haste to get back to my ship. I was wrong to leave the brig. It was a mistake. A captain's place is on board, and nowhere else."

"Johnson is there."

"I know that, but let us make haste."

The sled went swiftly on, and owing to some peculiar phosphorescence in the snow, it seemed to be traversing red-hot ground, raising a cloud of sparks as it ran along. The Doctor hurried forward to examine this phenomenon more closely, but all of a sudden, in trying to jump over a hummock, he disappeared. Bell ran towards the spot immediately, but the Doctor was nowhere to be seen, and though he shouted his name, there was no reply till the captain, who came up just then with Simpson, called out:

"Doctor! where are you?"

"Down here, in a hole," was the reassuring answer. "Throw me the end of a rope, and let me get to the earth's surface again."

The hole into which he had fallen was full ten feet deep, but his three companions succeeded in drawing him safely up, though not without difficulty.

"Are you hurt?" asked Hatteras.

"Never a bit! there is no fear of me," he replied, shaking the snow off his good-tempered face.

"But how did it happen?"

"Oh! it is all owing to refraction—always that stupid refraction," he said, laughing. "I thought I was going to jump over a gap not more than a foot broad, and I found myself in a hole ten feet deep. Take a lesson from me, and don't venture a step till you have tried the ground with your staff. There is no trusting to one's senses in this region."

"Can we go on?" said Hatteras.

"Oh, go on, by all means. This little tumble will do me more good than harm."

Once more they set off, and by the time they halted for the night they had gone a distance of five-and-twenty miles.

While the hut was being constructed for their night quarters, nothing would serve the Doctor but he must climb to the top of an iceberg and look about him.

The moon was almost full, and shining in the clear sky with extraordinary brilliancy. The stars, too, were wondrously beautiful, and as he gazed over the plain below, the surpassing grandeur of the spectacle amply repaid for the fatigue of the ascent. It resembled some vast cemetery full of monuments of every description, in which twenty generations lay slumbering; and in spite of cold and weariness, the Doctor could not tear himself from the scene. He was so absorbed and entranced that his companions could scarcely persuade him to come down. But the hut was ready, and it was high time to think of sleep, so he crept in after the others, and was soon in the arms of Morpheus.

The next few days passed without any particular incidents, sometimes making quicker and sometimes slower progress, till they reached the 15th of January.

The moon was now in her last quarter, and only visible for a short time. The sun, though never appearing above the horizon, made a sort of dim twilight for about six hours in the day. But it was too faint to

show the road, and the travelers had to steer the way by the compass. Bell went first, and set up a landmark for the rest to follow, so as to keep in a straight course as far as possible.

On the 15th of January, which was on a Sunday, Hatteras calculated that they had made a hundred miles. He devoted the morning to repairing sundry articles and to religious worship, and started again about noon.

The temperature was cold, only 32° above zero, and the air very clear.

SUDDENLY, without any warning and without any apparent reason, a sort of vapor began to rise from the ground, and condensed into minute frozen particles, instantly filling the atmosphere like dense fog, and rising to the height of about ninety feet, where it remained stationary. It was impossible to see a foot before one, and long shining crystals hung from everybody's clothes.

This was the frost time that had surprised the travelers, and its first effect was to make them wish to keep close together. Each began feeling and fumbling for the other, and calling out his name. But in this dense fog there was not only no seeing, but no hearing, for sounds pass feebly through it.

The same thought apparently struck each to fire a gun as a signal. But the confusion that followed was indescribable, for the noise was echoed far and wide, in one continuous roll.

Each man was left to his own instinct, and each acted in a characteristic manner. Hatteras stopped short, and stood with his arms folded to wait patiently. Simpson managed to keep fast by the sled. Bell felt for foot-marks on the ground, and the Doctor went tumbling about among the great blocks of ice, now going to the left and then to the right, and then losing himself completely.

After stumbling along in this fashion for five minutes or so, he said to himself:

"This can't last! Strange climate; rather too freaky for my taste. There is no reckoning on it. Hallo, Captain, where are you?" he shouted again.

But there was no response, and he resolved to reload his gun and fire a second time.

While doing this, he fancied he could discern the outlines of some dark object close by, and he called out:

"At last! Hatteras, Bell, Simpson, who is it? Speak!"

A low growl was the only reply.

"Ha! what can this be?" thought the good little man.

The moving mass came nearer, its proportion being increased by the fog rather than diminished. A terrible suspicion crossed the Doctor's mind.

"It is bear!" he said to himself. And a bear it actually was, and of huge dimensions. Bruin had lost his way in the fog like his neighbors, and was going hither and thither in all directions, almost knocking right against his enemies, though he little imagined their proximity.

"I'm in a pretty fix now," thought the Doctor.

The animal sometimes came so close to him that he could feel his breath, and the next minute he disappeared in the frost rime. Sometimes he caught a

glimpse of enormous paws beating the air, and more than once they touched him so nearly that his clothes were torn by the sharp claws.

But in leaping back the Doctor felt his foot strike rising ground, and by the help of his hand he succeeded in getting on the top of first one block of ice and then another and another, till he reached at last the summit of an iceberg nearly ninety feet high, and found himself in clear air, quite above the level of the fog.

"That's capital!" he said, and looking round, discovered his three companions also emerging from the frost rime.

"Hatteras!"

"Doctor Clawbonny!"

"Bell!"

"Simpson!"

These exclamations were almost simultaneous. The sky was illuminated by a magnificent halo, which tinged the frost rime with its soft rays, and gave it the appearance of liquid silver, from which the peaks of the icebergs issued.

The travelers discovered they were in a sort of amphitheater about a hundred feet in diameter, and though they had each clambered up different icebergs, and were considerable distances apart, yet, thanks to the intense cold, and extreme purity of the atmosphere, they could hear one another's voice quite easily, and were able to carry on a conversation.

"Where's the sled?" asked the captain.

"Down there, eighty feet below," replied Simpson.

"Is it all right?"

"First-rate."

"And what about the bear?" inquired the Doctor.

"What bear?"

"The bear I met, that almost made me break my neck."

"A bear!" exclaimed Hatteras; "we had better look after him."

"No, no!" said the Doctor; "we should only lose ourselves, and gain nothing by it."

"Well, but suppose he fell on our dogs?"

At that very moment Duk began barking furiously, and Hatteras exclaimed:

"That's Duk! I'm sure there's something up!! I'm going down."

"Stop, Hatteras, stop! I think the fog is clearing," said the Doctor.

It was not clearing, but it was gradually getting lower. It seemed to sink into the earth from whence it had risen.

Soon the top of the sled appeared, then the dogs; then about thirty other animals were seen, and large, shapeless moving masses. Duk was leaping and jumping about, appearing and disappearing in the fog.

"Foxes!" exclaimed Bell.

"Bears!" said the Doctor. "I can see one—three—five!"

"Let's see to the dogs and the provisions," shouted Simpson.

It was high time, for a whole pack of foxes and bears had attacked the sled and were making fine

havoc of the food. The dogs barked might and main, but their fury had no effect, and the work of pillage was fast going on.

"Fire!" cried Hatteras, discharging his gun.

His companions followed his example immediately, to the evident alarm of the four-footed robbers, for the whole troop scampered away at once, and speedily disappeared among the icebergs.

CHAPTER XXIX

The Cairn

THIS peculiar phenomenon of the Arctic regions lasted about three-quarters of an hour, so that the bears and foxes had time to regale themselves comfortably. The supply was most opportune for the poor starving animals, and they had not been backward in profiting by it. Cases of pemmican were broken open and emptied, bags of biscuits devoured, tea strewn among the snow, and one keg of spirits of wine smashed to pieces, and all the contents lost; blankets, and skins, and coverings tossed here and there in all directions—nothing had been left untouched by the famished and voracious beasts.

"This is a bad job for us," said Bell, contemplating the scene of desolation.

"One that can't be remedied, I fear," added Simpson.

"We had better see what mischief has been done first, and then talk about it afterwards, I think," said the Doctor.

Hatteras made no remark, but busied himself silently in collecting the scattered bags and cases. The loss of any of the spirits of wine was most vexatious. After picking what biscuits and pemmican were still eatable, the Doctor made an estimate of the damage done, and found that 200 pounds of pemmican and 150 pounds of biscuits had disappeared; so that if the journey was to be continued, they must be content with half the usual rations.

It became a question, therefore, whether to go on or return to the ship, and recommence the expedition. But to return would be to lose 150 miles already gained, and, moreover, to return without the coal would have a most disastrous effect on the crew!

All but Simpson decided in favor of going on, even at the price of the hardest privations. The poor fellow's health had begun to give way, and he was anxious to be back on board ship; but, finding he stood alone in his opinion, he yielded to the others, and resumed his place beside the sled.

The monotonous journey went on much as usual, unmoved by any fresh event till the 17th of January, when the whole aspect of the region suddenly changed. A great number of sharp, towering peaks, like pointed pyramids, appeared on the horizon, and the soil in certain places rose above the snow. It was composed apparently of gneiss, schist, and quartz, with some admixture of chalky rock. The travelers had reached firm land once more, and this land could be none other than New Cornwall.

The Doctor congratulated himself on being off the treacherous ice, and only a hundred miles from Cape Belcher; but, strangely enough, the difficulties of the journey increased rather than diminished, and they soon had cause to regret the smooth, almost unbroken ice over which the sled could glide with comparative ease, for the road was rugged in the extreme, full of sharp rocks, and precipices, and crevices. They were obliged to make a circuitous course towards the interior, to get to the top of the steep cliffs on the coast, and across tremendous gorges, where the snow was piled up thirty or forty feet high.

It was hard work to drag the sled along, for the dogs were exhausted, and the men had to harness themselves and help. Several times everything had to be taken out of it before they could get to the top of some steep hill, the glassy sides of which afforded no foothold for man or beast.

On the evening of the second day after their arrival on the coast of New Cornwall, the men were so completely exhausted that they were unable to erect their usual snow-hut. They passed the night under the tent, wrapped in their buffalo skins, and tried to dry their wet stockings by the heat of their own bodies. Before morning the thermometer fell lower and the mercury froze.

The inevitable consequences of such exposure followed. Simpson's health was shaken alarmingly; an obstinate cold clung to him, and violent rheumatic pains, which obliged him to lie all day on the sled. Bell had to take his place in guiding the dogs, for though he was far from well, he was not unable to keep about. The Doctor also suffered considerably, but he never complained. Hatteras, impassible, impenetrable, and hard as ever, was as strong as on the first day, and walked silently behind the sled.

On the 20th of January the temperature was so low that the slightest exertion was followed by complete prostration; and yet the road was so rugged and difficult that the Doctor, and Bell, and Hatteras, too, had to harness themselves to the sled with the dogs. Constantly jolting over the uneven ground had broken the front part, and it was necessary to stop and repair it. Delays like these soon became frequent.

The three men were jogging along through a deep ravine, where the snow was up to their waists, and the perspiration was streaming from every pore in spite of the intense cold, when Bell, who was nearest the Doctor, looked at him in alarm, and, without saying a word, caught up a handful of snow, and began rubbing his worthy friend's face as vigorously as possible, to the great bewilderment of the Doctor.

"What now, Bell?" exclaimed the Doctor.

But Bell still went on rubbing, till the little man's eyes, nose and mouth were all full of snow.

"I say, Bell, what's all this? Are you mad? What do you mean?" he called out again.

"I mean this, that you have me to thank for it if you still have a nose."

"A nose?" replied the Doctor, putting up his hand to his face.

"Yes, Dr. Clawbonny, you were completely frost-bitten. Your nose was quite white when I looked at you, and without my rough treatment you would have lost an ornament that is very necessary in life, though rather inconvenient in traveling."

Bell was right. A few minutes longer, and the Doctor's nose would have been gone.

"Thanks, Bell; I'll do as much for you some day."

"I quite reckon on it, and Heaven grant we may have no worse misfortunes to come!" replied the carpenter.

"Ah! you refer to Simpson; the poor fellow is in great pain."

"Have you any fear for him?" asked Hatteras, quickly.

"I have, Captain."

"What is it you apprehend, Doctor?"

"A violent attack of scurvy. His legs are swelling already, and his gums are affected. There he lies wrapped up in the blankets, half-frozen, and these constant jolts aggravate his sufferings. I pity him, Hatteras, but I can do nothing for him!"

"Poor Simpson!" murmured Bell.

"Perhaps we might rest a day or two," suggested the Doctor.

"Rest a day or two!" cried Hatteras, "when the lives of eighteen men hang on our return!"

"Still——" began the Doctor.

"Clawbonny, Bell, listen to me. We have only food enough for twenty days! Can we afford to waste an instant?"

Neither the Doctor nor Bell made any reply, and the sled went on.

In the evening the little cavalcade stopped at the foot of an ice-hill, in which Bell soon cut out a cave to shelter them for the night.

The Doctor stayed up with Simpson, while the others slept, for the scurvy had made frightful ravages on the poor man's frame, and he moaned piteously with pain.

"Ah! Dr. Clawbonny," he said.

"Come, cheer up, my lad!" replied the Doctor.

"I shall never go back! I feel it! I can go no farther."

The Doctor only replied by redoubling his attentions. Forgetting his own fatigue, he busied himself in preparing some soothing draught for his suffering patient, for lime-juice and friction were now powerless.

When morning came, the unfortunate man had to be replaced on the sled, though he entreated to be left behind to die in peace. The weary march was resumed, amid increasing difficulties, for icy fogs pierced the travelers to the very marrow, and hail and snow lashed their faces.

Duk, like his master, seemed to feel nothing, and showed wonderful sagacity in finding out the best road.

On the morning of the 23rd, when it was nearly quite dark, as there was a new moon, Duk was suddenly missing. He had been out of sight for several hours, and Hatteras grew uneasy, for the tracks of bears were pretty numerous. He was just considering what was best to be done, when he caught the sound of loud

barking in the distance, and, urging the sledge forward, soon came up to his faithful beast at the bottom of a ravine.

Duk was standing motionless in front of a sort of cairn, and barking violently.

"This time it is a cairn, at all events," said the Doctor.

"What's that to us?" asked Hatteras.

Hatteras, if it is a cairn, it may contain some valuable document for us, or perhaps it is a depot of provisions, and that is worth our while to look at."

"And what European can have been this way?" said the captain, shrugging his shoulders.

"But though no European was here, may not the Esquimaux have been here and made a hiding-place for the spoils of their hunting and fishing? It is quite in keeping with their habits."

"Well, well, Clawbonny, examine it if you choose, but I question if you get anything for your pains."

By the help of mattocks, the cairn was soon demolished, and a box was discovered, inside which was a paper quite damp with moisture. The Doctor seized it with a beating heart, and handed it to Hatteras, who read as follows: "Altam—, *Porpoise* 13 Dec. 1860 12° longitude, S 55° lat."

"The *Porpoise*!" said the Doctor.

"The *Porpoise*!" repeated Hatteras. "I know no vessel of that name that has been in these seas."

"It is quite evident that whatever vessel she is, her crew, or possibly some of her shipwrecked men, passed this way less than two months ago," replied Clawbonny.

"That is quite certain," added Bell.

"What shall we do?" asked the Doctor.

"Continue our journey," replied Hatteras, coldly. "I know nothing of the *Porpoise*, but I know that the brig *Forward* is waiting our return."

CHAPTER XXX The Death of Simpson

THE journey was resumed, each of the party absorbed in his own reflections about the unexpected discovery just made. Hatteras knit his brows uneasily, and said to himself:

"What vessel can this be? What is she doing so near the Pole?"

The Doctor and Bell only thought of going to the rescue of some poor fellows like themselves, or being rescued by them.

But before long they were engrossed enough with their own dangers and difficulties, for their situation became hourly more perilous.

Simpson was getting gradually worse, and the Doctor's practiced eye saw death rapidly approaching. He could do nothing for him; he was suffering acutely himself from ophthalmia, which might end in total blindness. The twilight was strong enough now to cause a glaring reflection on the snow which burnt the eyes. Spectacles would have been some protection, but it was impossible to wear them, as the glasses became encrusted with ice immediately, and consequently per-

fectedly opaque. Yet it was necessary to keep a constant look-out to avoid accidents. This must be done at all risks, so Bell and the Doctor agreed to undertake the duty in turn, and bandage their eyes in the intervals.

On the 25th of January the road became even more dangerous and difficult, from the steep declivities they met with constantly, when one false step would have precipitated them into deep ravines.

Towards evening a violent tempest swept over the snowy ridges, and soon increased to such a hurricane, that they were forced to stop and lie down on the ground. But the temperature was so low that they would all inevitably have been frozen to death had not Bell succeeded, after much difficulty, in making a snow-hut, in which they took shelter and recruited themselves scantily with a few morsels of pemmican and some hot tea. There were only four gallons of spirits of wine now remaining, as it was not only used in making tea and coffee, but in getting water to drink, for it must not be imagined that snow can be employed to quench thirst without being melted. In temperate countries, where the thermometer is scarcely ever so low as freezing point, it might not be injurious, but beyond the polar circle it is quite a different matter. The snow there is so intensely cold, that one could no more lay hold of it with the naked hand than red-hot iron; consequently, there is such a difference of temperature between it and the stomach, that swallowing any portion would actually cause suffocation. The Esquimaux would rather endure prolonged agonies of thirst than attempt to relieve it with snow.

At three in the morning, when the storm outside was at the worst, the Doctor was taking his turn at watch, and sitting in a corner of the hut, leaning against the wall, when a piteous moan from Simpson aroused his attention. He rose hastily to go to him, and struck his head against the roof, but thinking nothing more of it, he stooped down beside Simpson, and began rubbing his blue, swollen legs. He had continued the friction for about a quarter of an hour, when he wanted to shift his position. On trying to get up, for he had been kneeling, he knocked his head against the roof a second time.

"This is strange!" he said to himself, and put his hand to feel above him. The roof was sinking, there was no mistake.

"Quick, quick friends!" he exclaimed, rousing Bell and Hatteras, who started up in alarm, and in their turn struck their heads against the roof.

"We shall be crushed!" cried the Doctor. "Out! out! this minute."

It was pitch-dark inside, but they managed to drag Simpson through the opening, and just saved themselves in time, for the next minute the entire hut fell in with a loud noise.

The unfortunate travelers were now exposed to the full fury of the tempest, in addition to the extreme cold. Hatteras hastened to put up the tent; but it would not stand before the violence of the hurricane, and all they could do was to shelter themselves beneath the canvas, which was soon covered with a thick coat-

ing of snow, and preserved the poor fellows from being frozen alive.

Towards morning the storm abated, and the little party prepared to start afresh. In harnessing the dogs, Bell discerned that the wretched, half-starved animals had begun to gnaw their leather traces, and two of the beasts were evidently ill, and would not be able to go very far.

They set out again, however, for sixty miles more had yet to be traversed before they reached the goal.

On the 26th, Bell, who was in advance, called out suddenly to his companions. On hastening towards him, he pointed out a gun placed bolt upright against a mass of ice.

Hatteras lifted it up, and found it loaded and in good condition.

"The men belonging to the *Porpoise* cannot be far off!" exclaimed the Doctor.

On examination, the gun proved to be of American manufacture, and the very touch of it sent a thrill through the veins of the captain.

"Forward!" he said, in hollow tones, and the cavalcade marched on, down the steep sides of the mountains.

The storm had by no means ceased, and the sled went slower and slower. Only a few miles' progress was made in twenty-four hours, and, notwithstanding the severest economy, the stock of provisions was fast decreasing; but as long as more than enough remained for the journey back, Hatteras pushed forward.

On the 27th, a sextant was found half buried in the snow, and then a gourd still containing some brandy, or rather a lump of ice, in the center of which all the spirit had taken refuge in the form of a ball of snow.

It was evident that Hatteras had unintentionally got on the track of some great disaster, for in pursuing the only practicable road, he was constantly finding evidences of a terrible shipwreck.

The Doctor felt saddened by the thought, however, that even should any poor creature be discovered, he could do nothing to help him. His companions and himself were beginning to be in want of everything. Should the shipwrecked crew be numerous, they would all perish from hunger. Hatteras appeared anxious to hurry away from the chance of meeting them; but was he not right? Was he not responsible for the lives of his men? Ought he to compromise their safety by bringing strangers on board?

Yet these strangers were fellow-men, perhaps fellow-countrymen! Ought they to be abandoned without at least an effort to save them? The Doctor asked Bell his opinion about it, but could get no reply. Suffering had hardened his heart. Clawbonny did not dare to appeal to Hatteras—all he could do was to trust to Providence.

Towards evening Simpson grew worse, and his end seemed near. His limbs were rigid, and his face wore a terrible despairing look, which changed to fierce vindictive rage whenever his glance fell on Hatteras.

Hatteras did not go near him; he was more taciturn, reserved, and incommunicative than ever.

It was a fearful night. The storm raged with redoubled violence, and three times the tent had been torn down, and the snow-drift had beat piteously on the unsheltered men, blinding their eyes, freezing them to the marrow, and cutting their faces with the sharp pieces of ice broken off the surrounding icebergs. The dogs howled lamentably, and poor Simpson lay dying. Bell succeeded once more in securing the tent, which, frail as it was, protected them from snow, if not from cold, but a sudden blast tore it up a fourth time, and whirled it completely away.

"Really this is beyond endurance!" exclaimed Bell.

"Courage!" said the Doctor, catching hold of his arm to keep himself from being blown down the ravine.

The death-rattle was heard in Simpson's throat. Suddenly he made an expiring effort, half raised himself, shook his clenched fist at Hatteras, who looked at him with fixed, steady gaze, and fell back lifeless.

"Dead!" exclaimed the Doctor.

"Dead!" echoed Bell.

Hatteras came forward to look, but was driven back by the wind. The dead man counted him his murderer, but he was not overwhelmed by the accusation, though a tear escaped his eye, and stiffened on his pale cheek.

This was the first of the crew that had fallen a victim—the first who would never return to England—the first who paid the penalty with his life for the captain's indomitable obstinacy.

The Doctor and Bell gazed at him with a sort of terror, as he stood motionless the livelong night, resting on his stick, as if defying the tempest that roared about him.

CHAPTER XXXI The Return to the Forward

ABOUT six in the morning, the wind suddenly shifted north, and diminished. The sky cleared, and the first glimmer of twilight silvered the horizon, to be succeeded in a few days by the golden rays of the sun.

Hatteras went up to his dejected companions, and said in a gentle, sad voice:

"My friends, we are more than sixty miles still from the spot mentioned by Belcher. We have just barely enough food to last us back to the ship. To go farther would be to expose ourselves to certain death, without profit to anyone. We will retrace our steps."

"You have come to a good resolution, Hatteras, I think," said the Doctor. "I would have followed you wherever you had chosen to go; but our strength is diminishing day by day, and we can scarcely drag one leg after the other. I heartily approve of your decision."

"And you are of the same mind, Bell?" asked Hatteras.

"Yes, captain, I am," was the reply.

"Very well then," returned Hatteras, "we will give ourselves two days' rest. That is not too much. The sled is in great need of repair. I think our best plan will be to make a snow-hut, to shelter us till we are ready to begin our journey back."

This point settled, all three set to work with ardor, and soon built up a hut at the bottom of the ravine.

It must have cost Hatteras a tremendous struggle to relinquish his project. All this toil and trouble wasted, and one man's life into the bargain! And how would he be received by the crew, returning thus empty-handed?

He gave all his attention now to the thorough repair of the sled. It had not more than 200 pounds weight to carry, and was soon brought into working trim. The worn-out, tattered garments were mended, and new snowshoes and moccasins replaced the old ones. These necessary occupations took up one entire day and the morning of another, the poor fellows resting themselves at the same time after their sore fatigues, and trying to get up their strength for the weary march back.

Ever since they had been in the hut, the Doctor had remarked Duk's strange behavior. The animal kept running in and out, and going round and round a heap of snow and ice, giving occasionally a low bark and wagging his tail impatiently, with an inquiring look at his master.

Clawbonny could not understand what ailed the dog, but at last came to the conclusion that his restlessness was caused by the sight of Simpson's corpse, which there had not been time yet to bury. He resolved to have it interred that very day, as they were to set off next morning as soon as it was light.

Bell undertook to assist, and the two, provided with mattocks, set off together to dig a deep hole in the bottom of the ravine. The heap round which Duk kept watch seemed the most favorable spot, and they proceeded to lift off the ice and snow, which seemed lying in layers. After removing the snow, they attacked the ice; but at the third stroke the Doctor's mattock encountered some hard substance, which proved to be a fragment of a wine bottle. Bell, who was at work on the opposite side, turned up that same instant a crumpled-up bag, in which were some pieces of biscuit in a perfect state of preservation.

"Heigho!" exclaimed the Doctor. "What's this, I wonder?"

He called out to Hatteras, who came up immediately. Duk still kept on barking, and scratching at the ice with his paws.

"Can we have come upon a depot of provisions?" asked the Doctor.

"Possibly," said Bell.

Hatteras advanced no opinion, but simply said: "Go on digging."

More fragments of food soon appeared, and then a case of pemmican about a quarter full.

"If it is a depot, the bears have certainly been here before us, for see, nothing is whole!" said Hatteras.

"It is to be feared that is the case," replied Clawbonny, "for—"

He did not finish his sentence, for he was interrupted by an exclamation from Bell, and looking across, saw he had uncovered a human leg!

"A corpse!" cried the Doctor.

"It is no depot," said Hatteras; "it is a tomb."

When the corpse was entirely disinterred, it proved to be that of a young man of not more than thirty years of age. He wore the common dress of Arctic navigators, and the Doctor could not form an opinion as to the date of his death, for the body was in a state of perfect preservation.

Ere long, a second corpse was dug out, a man about fifty, apparently, whose countenance bore traces of evident suffering.

"These men have never been buried!" exclaimed the Doctor. "They have met their death by just such an accident as almost befall ourselves."

"You are right, Dr. Clawbonny," replied Bell.

"Go on," said Hatteras.

Bell felt half afraid, for who could say how many more bodies might be under that heap of ice?

"Their snow hut has fallen in," said the Doctor. "Perhaps some poor fellow may be still living under the mass."

The whole mass was speedily cleared away, and a third body was dragged out; that of a man about forty. His appearance was not so cadaverous as the others, and on examining him closely, the Doctor thought he could perceive some faint tokens of life.

"He is not dead!" he exclaimed, lifting him up with Bell's assistance, and carrying him into the hut; while Hatteras stood motionless and unconcerned, contemplating the scene of the catastrophe.

The Doctor proceeded to strip the exhumed man entirely, and finding no trace of any wound about him, set to work, with Bell, to try the effect of vigorous friction with wisps of tow steeped in spirits of wine. By slow degrees they succeeded in restoring some animation, but the poor fellow was in such a state of utter exhaustion that he was quite unable to articulate.

Leaving Bell to continue the treatment, Dr. Clawbonny searched the pockets of his patient to see if he could find any letters or papers. But they were empty.

He went to Hatteras, and found him standing with the half-burnt envelope of a letter in his hand, which he had found in the ruins of the hut. This much of the direction written on it was still legible:

—tamont.

—orpoise.

—w York.

"Altamont!" exclaimed the Doctor. "Ship *Porpoise*, New York!"

"An American!" said Hatteras, with a start.

"I will save him," said the Doctor, "as sure as I'm alive, and we'll get to the bottom then of this mystery."

He returned to Altamont and redoubled his efforts, till he had the satisfaction of bringing the unfortunate man back to life, though not to consciousness. He could neither see, nor hear, nor speak.

Next morning Hatteras came up to the Doctor and said:

"We cannot delay our return. We must be off!"

"Let us be off by all means, Hatteras. The sled is not loaded, so we can lay this poor fellow on it, and take him with us."

"So be it," said Hatteras; "but let us bury these

dead bodies of the victims of the Arctic first."

The unknown sailors were laid once more in their icy grave, and poor Simpson's form filled the place of Altamont. A brief prayer was spoken as a last adieu, and then the three men turned and silently commenced their journey towards the ship.

Two of the dogs being dead, Duk came and offered his services as plainly as a dumb beast could, and a most effective coadjutor he proved, working with the conscience and the will of a Greenlander.

The return march was unmarked by any particular incidents. February being the coldest month of the Arctic winter, the ice was uniformly hard and unbroken, and though the travelers suffered intensely from the low temperature, they had no fierce storms to contend with.

The sun had reappeared since the 31st of January, and each day rose higher above the horizon.

The Doctor and Bell were at the end of their strength and nearly blind and lame.

Altamont still breathed, but he was in a state of complete insensibility, and sometimes the Doctor despaired, till unremitting care revived the flickering spark of life.

Hatteras thought night and day of his brig, and full of anxious forebodings and questionings as to the state in which he might find her, he hurried impatiently forward.

On the 24th of February, in the early morning, he came to a sudden stop.

About three hundred paces distant he saw a bright red glare, from which an immense volume of black smoke rose up towards the sky.

"Look at that smoke!" he shouted. His heart beat violently, and again he shouted to his companions:

"Look! Down there! All that smoke! My ship is on fire."

"It can't be the *Forward*," said Bell. "We are more than three miles away."

"Yes it is," replied the Doctor. "It is the mirage

which deceives us and makes her seem so near us."

"Let us run," said Hatteras, rushing forward. His companions followed with what speed they could, leaving Duk to guard the sled.

About an hour afterwards they came in sight of the vessel. It was a terrible spectacle! The ship was blazing in the midst of the icebergs which surrounded her. Flames enveloped the hull, and Hatteras could catch the sound of her cracking timbers. A few paces distant a man was seen, flinging up his arms wildly, and gazing in mute despair.

This solitary man was old Johnson. Hatteras ran towards him, exclaiming in broken tones: "My ship! my ship!"

"You, captain! Is it you?" cried Johnson. "Stop! Not a step farther!"

"Tell me," said Hatteras, with a terrible look on his face.

"The villains!" replied Johnson. "They set the ship on fire and started off, forty-eight hours ago!"

"Curse them!" said Hatteras fiercely.

Just then a tremendous explosion was heard which shook the whole region, and laid the icebergs flat on the ice. The flames had reached the gunpowder and blown the ship to atoms. For a minute there was a dense cloud of smoke, and then the *Forward* disappeared in a gulf of fire.

Bell and the Doctor came up that same instant, and found the captain overwhelmed with despair. But suddenly he roused himself, and said, in a strong, cheery voice:

"Friends! the cowards have fled! Fortune favors the brave. Johnson and Bell, you have courage; Doctor, you have science; I have faith. Yonder is the North Pole. Let's begin again."

Such manly, courageous words put new life into the hearts of his companions, and yet their situation was indeed terrible to contemplate. Four men, and one of them dying, forsaken and left to perish without resources in the very heart of the Polar regions.

Book II

The Desert of Ice

CHAPTER I

The Doctor's Inventory

IT was a bold project of Hatteras to push his way to the North Pole, and gain for his country the honor and glory of its discovery. But he had done absolutely all that lay in human power now, and, after having struggled for nine months against all kinds of currents and tempests, shattering icebergs and breaking through almost insurmountable barriers, amid the cold of an unprecedented winter, after having outdistanced all his predecessors and accomplished half his task, he suddenly saw all his hopes blasted. The treachery, or rather the despondency, of his wornout crew, and the criminal folly of one or two leading spirits among them,

had left him and his little band of men in a terrible situation—helpless in an icy desert, two thousand five hundred miles away from their native land, and without even a ship to shelter them.

However, the courage of Hatteras was still undaunted. The three men who were left him were the best on board his brig, and while they remained, he might venture to hope.

After the cheerful, manly words of the captain, the Doctor felt the best thing to be done was to look their prospects fairly in the face, and know the exact state of things. Accordingly, leaving his companions, he stole away alone down to the scene of the explosion.

Of the *Forward*, the brig that had been so carefully built and had become so dear, not a vestige remained.

Shapeless blackened fragments, twisted bars of iron, cable ends still smouldering, and here and there in the distance spiral wreaths of smoke, met his eye on all sides. His cabin and all his precious treasures were gone; his books, and instruments, and collections reduced to ashes. As he stood thinking mournfully of his irreparable loss, he was joined by Johnson, who grasped his offered hand in speechless sorrow.

"What's to become of us?" asked the Doctor.
"Who can tell?" was the old sailor's reply.

"Anyhow," said Clawbonny, "do not let us despair. Let us be men!"

"Yes, Dr. Clawbonny, you are right. Now is the time to show our mettle. We are in a bad plight, and how to get out of it, that is the question."

"Poor old brig!" exclaimed the Doctor. "I had grown so attached to her. I loved her as one loves a house where he has spent a lifetime."

"Ay! it's strange what a hold those planks and beams get on a fellow's heart."

"And the long-boat—is that burnt?" asked the Doctor.

"No, Dr. Clawbonny. Shandon and his gang have carried it off."

"And the pirogue?"

"Shivered into a thousand pieces! Stop. Do you see those bits of sheet-iron? That is all that remains of it."

"Then we have nothing but the Halkett-boat?"

"Yes, we have that still, thanks to your idea of taking it with you."

"That isn't much," said the Doctor.

"Oh, those base traitors!" exclaimed Johnson.

"Johnson," returned the Doctor, gently, "we must not forget how sorely they have been tried. Only the best remain good in the evil day; few can stand trouble. Let us pity our fellow-sufferers, and not curse them."

For the next few minutes both were silent, and then Johnson asked what had become of the sled.

"We left it about a mile off," was the reply.

"In charge of Simpson?"

"No, Simpson is dead, poor fellow!"

"Simpson dead!"

"Yes, his strength gave way entirely, and he was the first to sink."

"Poor Simpson! And yet who knows if he isn't rather to be envied?"

"But, for the dead man we have left behind, we have brought back a dying one."

"A dying man?"

"Yes, Captain Altamont." And in a few words he informed Johnson of their discovery.

"An American!" said Johnson, as the recital was ended.

"Yes, everything goes to prove that. But I wonder what the *Porpoise* was, and what brought her in these seas?"

"She rushed on to her ruin like the rest of foolhardy adventurers; but, tell me, did you find the coal?"

The Doctor shook his head sadly.

"No coal! not a vestige! No, we did not even get

as far as the place mentioned by Sir Edward Belcher!"

"Then we have no fuel whatever?" said the old sailor.

"No."

"And no provisions?"

"And no ship to make our way back to England?"

It required courage indeed to face these gloomy realities, but after a moment's silence, Johnson said again:

"Well, at any rate we know exactly how we stand. The first thing to be done now is to make a hut, for we can't stay long exposed to this temperature."

"Yes, we'll soon manage that with Bell's help," replied the Doctor. "Then we must go and find the sled, and bring back the American, and have a consultation with Hatteras."

"Poor captain," said Johnson, always forgetting his own troubles, "how he must feel it!"

CLAWBONNY and Bell found Hatteras standing motionless, his arms folded in his usual fashion. He seemed gazing into space, but his face had recovered its calm, self-possessed expression. His faithful dog stood beside him, like his master, apparently insensible to the biting cold, though the temperature was 32° below zero.

Bell lay on the ice in an almost inanimate condition. Johnson had to take vigorous measures to rouse him, but at last, by dint of shaking and rubbing him with snow, he succeeded.

"Come, Bell," he cried, "don't give way like this. Exert yourself, my man; we must have a talk about our situation, and we need a place to put our heads in. Come and help me, Bell. You haven't forgotten how to make a snow hut, have you? There is an iceberg all ready to hand; we've only got to hollow it out. Let's set to work; we shall find that is the best remedy for us."

Bell tried to shake off his torpor and help his comrade, while Dr. Clawbonny undertook to go and fetch the sled and the dogs.

"Will you go with him, captain?" asked Johnson.

"No, my friend," said Hatteras, in a gentle tone, "if the doctor will kindly undertake the task. Before the day ends I must come to some resolution, and I need to be alone to think. Go. Do meantime whatever you think best. I will deal with the future."

Johnson went back to the Doctor, and said: "It's very strange, but the captain seems quite to have got over his anger. I never heard him speak so gently before."

"So much the better," said Clawbonny. "Believe me, Johnson, that man can save us yet."

And drawing his hood as closely round his head as possible, the Doctor seized his iron-tipped staff, and set out without further delay.

Johnson and Bell commenced operations immediately. They had simply to dig a hole in the heart of a great block of ice; but it was not easy work, owing to the extreme hardness of the material. However, this very hardness guaranteed the solidity of the dwelling, and the further their labors advanced the more did

the immediate prospect of adequate shelter increase.

Hatteras alternately paced up and down and stood motionless, evidently shrinking from any approach to the scene of explosion.

In about an hour the Doctor returned, bringing with him Altamont lying on the sled, wrapped up in the folds of the tent. The poor dogs were so exhausted from starvation that they could scarcely draw it along, and they had begun to gnaw their harness. It was, indeed, high time for beasts and men to take food and rest.

While the hut was being still further dug out, the Doctor went foraging about, and had the good fortune to find a little stove, almost undamaged by the explosion. He soon restored it to working trim, and, by the time the hut was completed, had filled it with wood and got it lighted. Before long it was roaring, and diffusing a genial warmth on all sides. The American was brought in and laid on blankets, and the four Englishmen seated themselves around the fire to enjoy their scanty meal of biscuit and hot tea, the last remains of the provisions on the sled. Not a word was spoken by Hatteras, and the others respected his silence.

When the meal was over, the Doctor rose and went out, making a sign to Johnson to follow.

"Come, Johnson," he said, "we will take an inventory of all we have left. We must know exactly how we are off, and our treasures are scattered in all directions; so we had better begin, and pick them up as fast as possible, for the snow may fall at any moment, and then it would be quite useless to look for anything."

"Don't let us lose a minute, then," replied Johnson. "Fire and food—these are our chief wants."

"Very well, you search one side and I'll take the other, and we'll take from the center to the circumference."

This task occupied two hours, and all they discovered was a little salt meat, about 50 lbs. of pemmican, three sacks of biscuits, a small stock of chocolate, five or six pints of brandy, and about two lbs. of coffee, picked up bean by bean off the ice.

Neither blankets, nor hammocks, nor clothing—all had been consumed in the devouring flame.

This slender store of provisions would hardly last three weeks, and they had wood enough to supply the stove for about the same time.

Now that the inventory was made, the next business was to fetch the sled. The tired-out dogs were harnessed sorely against their will, and before long returned, bringing the few but precious treasures found among the *debris* of the brig. These were safely deposited in the hut, and then Johnson and Clawbonny, half-frozen with their work, resumed their places beside their companions in misfortune.

CHAPTER II First Words of Altamont

ABOUT eight o'clock in the evening, the gray snow clouds cleared away for a little and the stars shone out brilliantly.

Hatteras seized the opportunity and went out silently to take the altitude of some stars of the great constellations. He wished to ascertain if the ice-field was still drifting.

In half an hour he returned and sat down in a corner of the hut, where he remained without stirring all night, motionless as if asleep, but in reality buried in deepest thought.

The next day the snow fell heavily, and the Doctor congratulated himself on his wise forethought, when he saw the white sheet lying three feet thick over the scene of the explosion, completely obliterating all traces of the *Forward*.

It was impossible to venture outside in such weather, but the stove drew capitally, and made the hut quite comfortable.

The American was evidently gradually coming back to life. He opened his eyes, but could not yet speak, for his lips were so affected by the scurvy, that articulation was impossible, but he could hear and understand all that was said to him. On learning what had passed, and the circumstances of his discovery, he expressed his thanks by gestures, and the Doctor was too wise to let him know how brief his respite from death would prove. In three weeks at most every vestige of food would be gone.

About noon Hatteras roused himself, and going up to his friends, said:

"We must make up our minds what to do, but I must request Johnson to tell me first all the particulars of the mutiny on the brig, and how this final act of baseness came about."

"What good will that do?" said the Doctor. "The fact is certain, and it is no use thinking over it."

"I differ from your opinion," rejoined Hatteras. "Let me hear the whole affair from Johnson, and then I will banish it from my thoughts."

"Well," said the boatswain, "this was how it happened. I did all in my power to prevent it, but—"

"I am sure of that, Johnson; and what's more, I have no doubt the ringleaders had been hatching their plans for some time."

"That's my belief, too," said the Doctor.

"And so it is mine," resumed Johnson; "for almost immediately after your departure Shandon, supported by the others, took the command of the ship. I could not resist him, and from that moment everybody did pretty much as he pleased. Shandon made no attempt to restrain them: it was his policy to make them believe that their privations and toils were at an end. Economy was entirely disregarded. A blazing fire was kept up in the stove, and the men were allowed to eat and drink at discretion; not only tea and coffee was at their disposal, but all the spirits on board, and on men who had been so long deprived of ardent liquors, you may guess the effect. They went on in this manner from the 7th to the 15th of January."

"And this was Shandon's doing?" asked Hatteras.

"Yes, captain."

"Never mention his name to me again! Go on, Johnson."

IT was about the 24th or 25th of January that they resolved to abandon the ship. Their plan was to reach the west coast of Baffin Bay, and from there to embark in the boat and follow the track of the whalers, or to get to some of the Greenland settlements on the eastern side. Provisions were abundant, and the sick men were so excited by the hope of return that they were almost well. They began their preparations for departure by making a sled which they were to draw themselves, as they had no dogs. This was not ready till the 15th of February, and I was always hoping for your arrival, though I half dreaded it too, for you could have done nothing with the men, and they would have massacred you rather than remain on board. I tried my influence on each one separately, remonstrating and reasoning with them, and pointing out the dangers they would encounter, and also the cowardice of leaving you, but it was a mere waste of words, not even the best among them would listen to me. Shandon was impatient to be off, and fixed the 22nd of February for starting. The sled and the boat were packed as closely as possible with provisions and spirits, and heaps of wood, to obtain which they had hewed the brig down to her water-line. The last day the men ran riot. They completely sacked the ship, and in a drunken paroxysm Pen and two or three others set it on fire. I fought and struggled against them, but they threw me down and assailed me with blows, and then the wretches, headed by Shandon, went off towards the east, and were soon out of sight. I found myself alone on the burning ship, and what could I do! The fire-hole was completely blocked up with ice. I had not a single drop of water. For two days the *Forward* struggled with the flames, and you know the rest."

A long silence followed the gloomy recital, broken at length by Hatteras, who said:

"Johnson, I thank you; you did all you could to save my ship, but single-handed you could not resist. Let us unite our efforts for our common salvation. There are four of us, four companions, four friends, and all our lives are equally precious. Let each give his opinion on the best course for us to pursue."

"You ask us then, Hatteras," said the Doctor; "we are all devoted to you, and our words come from our hearts. But will you not state your own views first?"

"That would be little use," said Hatteras, sadly; "my opinion might appear biased; let me hear all yours first."

"Captain," said Johnson, "before pronouncing on such an important matter, I wish to ask you a question."

"Ask it, then, Johnson."

"You went out yesterday to ascertain our exact position; well, is the field drifting or stationary?"

"Perfectly stationary. It had not moved since the last reckoning was made. I find we are just where we were before we left, in 80° 15' lat. and 127° 35' long."

"And what distance are we from the nearest sea to the east?"

"About six hundred miles."

"And that sea is—"

"Smith Sound," was the reply.

"The same that we could not get through last April?"

"The same."

"Well, captain, now we know our actual situation, we are in a better position to determine our course of action."

"Speak your minds, then," said Hatteras.

"What do you say, Bell?" asked the Doctor.

"It strikes me the case doesn't need long thinking over," said the carpenter. "We must get back at once without losing a single day or even a single hour, either to the south or east, and make our way to the nearest coast, even if we are two months doing it!"

"We have only food for three weeks," replied Hatteras.

"Very well, said Johnson, "we must make the journey in three weeks, since it is our last chance. Even if we can only crawl on our knees before we get to our destination, we must be there in twenty-five days."

"This part of the Arctic continent is unexplored. We may have to encounter difficulties. Mountains and glaciers may bar our progress," objected Hatteras.

"I don't see that's any sufficient reason for not attempting it. We shall have to endure sufferings, no doubt, and perhaps many. We shall have to limit ourselves to the barest quantities of food, unless our guns should procure us anything."

"There is only about half a pound of powder left," said Hatteras.

"Come now, Hatteras, I know the full weight of your objections, and I am not deluding myself with vain hopes. But I think I can read your motive. Have you any practical suggestion to offer?"

"No," said Hatteras, after a little hesitation.

"You don't doubt our courage," continued the doctor. "We would follow you to the last—you know that. But must we not, meantime, give up all hope of reaching the Pole? Your plans have been defeated by treachery. Natural difficulties you might have overcome, but you have been outmatched by perfidy and human weakness. You have done all that man could do, and you would have succeeded, I am certain; but situated as we are now, are you not obliged to relinquish your projects for the present, and is not a return to England even positively necessary before you could continue them?"

"Well, captain?" asked Johnson, after waiting a considerable time for Hatteras to reply.

Thus interrogated, he looked up and said in a constrained tone:

"You think yourselves quite certain then of reaching the Sound, exhausted though you are, and almost without food?"

"No," replied the Doctor, "but there is one thing certain, the Sound won't come to us; we must go to it. We may chance to find some Esquimaux tribes farther south."

"Besides, isn't there the chance of falling in with some ship that is wintering here?" asked Johnson.

"Even supposing the Sound is blocked up, couldn't we get across to some Greenland or Danish settlement? At any rate, Hatteras, we can get nothing by remain-

ing here. The route to England is towards the south, not the north."

"Yes," said Bell, "Dr. Clawbonny is right. We must start, and start at once. We have been forgetting our country too long already."

"Is this your advice, Johnson?" asked Hatteras again.

"Yes, captain."

"And yours, Doctor?"

"Yes, Hatteras."

Hatteras remained silent, but his face, in spite of himself, betrayed his inward agitation. The issue of his whole life hung on the decision he had to make, for he felt that to return to England was to lose all He could not venture on a fourth expedition.

The Doctor, finding he did not reply, added:

"I ought also to have said, that there is not a moment to lose. The sled must be loaded with the provisions at once, and as much wood as possible. I must confess six hundred miles is a long journey, but we can, or rather we must, make twenty miles a day, which will bring us to the coast about the 26th of March."

"But cannot we wait a few days yet?" said Hatteras.

"What are you hoping for?" asked Johnson.

"I don't know. Who can tell the future? It is necessary, too, that you should get your strength a little recruited. You might sink down on the road with fatigue, without even a snow-hut to shelter you."

"But think of the terrible death that awaits us here," replied the carpenter.

"My friends," said Hatteras, in almost supplicating tones; "you are despairing too soon. I should propose that we should seek our deliverance towards the north, but you would refuse to follow me, and yet why should there not be Esquimaux tribes round about the Pole as well as towards the south? The open sea, of the existence of which we are certified, must wash the shores of continents. Nature is logical in all her doings. Consequently vegetation must be found there when the earth is no longer icebound. Is there not a promised land awaiting us in the north from which you would flee?"

Hatteras became animated as he spoke, and Doctor Clawbonny's excitable nature was so wrought upon that his decision began to waver. He was on the point of yielding, when Johnson, with his wiser head and calmer temperament, recalled him to reason and duty by calling out:

"Come, Bell, let us be off to the sled."

"All right," said Bell, and the two had risen to leave the hut, when Hatteras exclaimed:

"Oh, Johnson! You! you! Well, go! I shall stay, I shall stay!"

"Captain!" said Johnson, stopping in spite of himself.

"I shall stay, I tell you. Go! Leave me like the rest! Come, Duk, you and I will stay together."

The faithful dog barked as if he understood, and settled himself down beside his master. Johnson looked at the Doctor, who seemed at a loss to know what to do, but came to the conclusion at last that the best way, meantime, was to calm Hatteras, even at the sacrifice

of a day. He was just about to try the force of his eloquence in this direction, when he felt a light touch on his arm, and turning round saw Altamont, who had crawled out of bed and managed to get on his knees. He was trying to speak, but his swollen lips could scarcely make a sound.

Hatteras went towards him, and watched his efforts to articulate so attentively that in a few minutes he made out a word that sounded like *Porpoise*, and stooping over him he asked:

"Is it the *Porpoise*?"

Altamont made a sign in the affirmative, and Hatteras went on with his queries, now that he had found a clue.

"In these seas?"

The affirmative gesture was repeated.

"Is she in the north?"

"Yes."

"Do you know her position?"

"Yes."

"Exactly?"

"Yes."

For a minute or so nothing more was said, and the onlookers waited with palpitating hearts.

Then Hatteras spoke again and said:

"Listen to me.

"We must know the exact position of your vessel. I will count the degrees aloud, and you will stop me when I come to the right one, and then I will count the minutes."

The American assented by a motion of the head, and Hatteras began:

"We'll take the longitude first. 105, No? 106°, 107°? It is to the west I suppose?"

"Yes," replied Altamont.

"Let us go on, then: 109-110-112-114-116-118-120°."

"Yes," interrupted the sick man.

"120° of longitude, and how many minutes? I will count."

Hatteras began at number one, and when he got to fifteen, Altamont made a sign to stop.

"Very good," said Hatteras; "now for the latitude. Are you listening? 80-81-82-83°."

Again the sign to stop was made.

"Now for the minutes; stop me when I call the correct one: 5-10-15-20-25-30-35'."

Altamont stopped him once more, and smiled feebly.

"You say, then that the *Porpoise* is in longitude 120° 15', and latitude 83° 35'?"

"Yes," sighed the American, and fell back motionless in the Doctor's arms, completely overpowered by the effort he had made.

"Friends!" exclaimed Hatteras; "you see I was right. Our salvation lies indeed in the north, always in the north. We shall be saved!"

But the joyous, exulting words had hardly escaped his lips before a sudden thought made his countenance change. The serpent of jealousy had stung him, for this stranger was an American, and he had reached three degrees nearer the Pole than had the ill-fated brig *Forward*.

CHAPTER II
A Seventeen Day's March

THESE first words of Altamont had completely changed the whole aspect of affairs, but his communication was still incomplete, and, after giving him little time to rest, the doctor undertook the task of conversing again with him, putting his questions in such a form that a movement of the head or eyes would be a sufficient answer.

He soon ascertained that the *Porpoise* was a three-masted American ship, from New York, wrecked on the ice, with provisions and combustibles in abundance still on board, and that, though she had been thrown on her side, she had not gone to pieces, and there was every chance of saving her cargo.

Altamont and his crew had left her two months previously, taking the long boat with them on a sled. They intended to get to Smith Sound and reach some whaler that would take them back to America; but one after another succumbed to fatigue and illness, till at last Altamont and two men were all that remained out of thirty; and truly he had survived by a providential miracle.

Hatteras wished to know why the *Porpoise* had come so far north, and learned in reply that she had been irresistibly driven there by the ice. But his anxious fears were not satisfied with this explanation, and he asked further what was the purpose of his voyage. Altamont said he wanted to make the northwest passage, and this appeared to content the jealous Englishman.

"Well," said the Doctor, "it strikes me that, instead of trying to get to Baffin Bay, our best plan would be to go in search of the *Porpoise*, for here lies a ship a full third of the distance nearer, and more than that, stocked with everything necessary for winter quarters."

"I see no other course open to us," replied Bell.

"And the sooner we go the better," added Johnson, "for the time we allow ourselves must depend on our provisions."

"You are right, Johnson," returned the doctor. "If we start to-morrow, we must reach the *Porpoise* by the 15th of March, unless we mean to die of starvation. What do you say, Hatteras?"

"Let us make preparations immediately, but perhaps the route may be longer than we suppose."

"How can that be, captain? The man seems quite sure of the position of his ship," said the Doctor.

"But suppose the ice-field should have drifted like ours?"

Here Altamont, who was listening attentively, made a sign that he wished to speak, and after much difficulty he succeeded in telling the doctor that the *Porpoise* had struck on rocks near the coast, and that it was impossible for her to move.

This was reassuring information, though it cut off all hope of returning to Europe, unless Bell could construct a smaller ship out of the wreck.

No time was lost in getting ready to start. The sled was the principal thing, as it needed thorough

repair. There was plenty of wood, and, profiting by the experience they had recently had of this mode of transit, several improvements were made by Bell.

On it a sort of a couch was laid for the American, and covered over with the tent. The small stock of provisions did not add much to the weight, but, to make up the deficiency, as much wood was piled upon it as could hold.

The Doctor did the packing, and made an exact calculation of how long their stores would last. He found that, by allowing three-quarters rations to each man and full rations to the dogs, they might hold out for three weeks.

Towards seven in the evening they felt so worn out that they were obliged to give up work for the night but, before lying down to sleep, they heaped up the wood in the stove, and made a roaring fire, determined to allow themselves this parting luxury. As they gathered round it, basking in the unaccustomed heat, and enjoying their hot coffee and biscuits and pemmican, they became quite cheerful.

About seven in the morning they set to work again, and by three in the afternoon everything was ready.

It was almost dark, for, though the sun had reappeared above the horizon since the 31st of January, his light was feeble and of short duration. Happily the moon would rise about half-past six, and her soft beams would give sufficient light to show the road.

THE parting moment came. Altamont was overjoyed at the idea of starting, though the jolting would necessarily increase his sufferings, for the Doctor would find on board the medicines he required for his cure.

They lifted him upon the sled, and laid him as comfortably as possible, and then harnessed the dogs, including Duk. One final look towards the icy bed where the *Forward* had been, and the little party set out for the *Porpoise*. Bell was scout as before; the Doctor and Johnson took each a side of the sled, and lent a helping hand when necessary; Hatteras walked behind to keep all in the right track.

They got on pretty quickly, for the weather was good, and the ice smooth and hard, allowing the sled to glide easily along; yet the temperature was so low that men and dogs were soon panting, and had often to stop and take breath. About seven the moon shone out, and irradiated the whole horizon. Far as the eye could see, there was nothing visible but a wide-stretching level plain of ice, without a solitary hummock or patch to relieve the uniformity.

As the doctor remarked to his companions, it looked like some vast, monotonous desert.

"Ay! Dr. Clawbonny, it is a desert, but we shan't die of thirst in it at any rate."

"That's a comfort, certainly; but I'll tell you one thing; it proves, Johnson, we must be a great distance from any coast. The nearer the coast the more numerous the icebergs in general, and you see there is not one in sight."

"The horizon is rather misty, though."

"So it is, but ever since we started we have been on this same interminable ice-field."

"Do you know, Dr. Clawbonny, that smooth as this ice is, we are going over most dangerous ground? Fathomless abysses lie beneath our feet."

"That's true enough, but they won't engulf us. This white sheet over them is pretty tough, I can tell you. It is always getting thicker, too; for in these latitudes it snows nine days out of ten, even in April and May; yes, and in June as well. The ice here, in some parts, cannot be less than between thirty and forty feet thick."

"Can you reckon pretty nearly what ice will bear, Dr. Clawbonny?" asked the old sailor, always eager for information.

"Yes, ice two inches thick will bear a man; three and a half inches, a man on horseback; five inches, an eight-pounder; eight inches, field artillery; and ten inches, a whole army."

"It is difficult to conceive of such a power of resistance, but you were speaking of the incessant snow just now, and I cannot help wondering where it comes from, for the water all around is frozen, and what makes the clouds?"

"That's a natural enough question, but my notion is that nearly all the snow or rain that we get here comes from the temperate zones. I fancy each of these snow-flakes was originally a drop of water in some river, caught up by evaporation into the air, and wafted over here in the shape of clouds; so that it is not impossible that, when we quench our thirst with the melted snow, we are actually drinking from the very rivers of our native land."

Just at this moment the conversation was interrupted by Hatteras, who called out that they were getting out of the straight line. The increasing mist made it difficult to keep together, and at last, about eight o'clock, they determined to come to a halt, as they had gone fifteen miles. The tent was put up and the stove lighted, and after their usual supper, they lay down and slept comfortably till morning.

The calm atmosphere was highly favorable, for though the cold became intense, and the mercury was always frozen in the thermometer, they found no difficulty in continuing their route, confirming the truth of Parry's assertion that any man suitably clad may walk abroad with impunity in the lowest temperature, provided there is no wind; whereas the least breeze would make the skin smart acutely, and bring on violent headache.

On the 5th of March a peculiar phenomenon occurred. The sky was perfectly clear and glittering with stars, when suddenly snow began to fall thick and fast, though there was not a cloud in the heavens; and through the white flakes the constellations could be seen shining. This curious display lasted two hours, and ceased before the Doctor could arrive at any satisfactory conclusion as to its cause.

The moon had ended her last quarter, and complete darkness prevailed now for seventeen hours out of the twenty-four. The travelers had to fasten themselves together with a long rope to avoid getting separated,

and it was all but impossible to pursue the right course.

Moreover, the brave fellows, in spite of their iron will, began to show signs of fatigue. Halts became more frequent, and yet every hour was precious, for the provisions were rapidly coming to an end.

Hatteras hardly knew what to think as day after day went on without apparent result, and he asked himself sometimes whether the *Porpoise* had any actual existence except in Altamont's fevered brain, and more than once the idea even came into his head that perhaps national hatred might have induced the American to drag them along with himself to certain death.

He told the Doctor his suppositions, who rejected them absolutely, and laid them down to the score of the unhappy rivalry that had arisen already between the two captains.

On the 14th of March, after sixteen days' march, the little party found themselves only in the 82nd latitude. Their strength was exhausted, and they had a hundred miles more to go. To increase their sufferings rations had to be still further reduced. Each man must be content with a fourth part, to allow the dogs their full quantity.

Unfortunately they could not rely at all on their guns, for only seven charges of powder were left, and six balls.

However, on the 15th, the Doctor was fortunate enough to surprise a seal basking on the ice, and, after several shots, the animal was captured and killed.

Johnson soon had it skinned and cut in pieces, but it was so lean that it was worthless as food, unless its captors would drink the oil like the Esquimaux.

The Doctor was bold enough to make the attempt, but failed in spite of himself.

Next day several icebergs and hummocks were noticed on the horizon. Was this a sign that land was near, or was it some ice-field that had broken up? It was difficult to know what to surmise.

On arriving at the first of these hummocks, the travelers set to work to make a cave in it where they could rest more comfortably than in the tent, and after three hours' persevering toil, were able to light their stove and lie down beside it to stretch their weary limbs.

CHAPTER IV

The Last Charge of Powder

JOHNSON was obliged to take the dogs inside the hut, for they would soon have been frozen outside in such dry weather. Had it been snowing they would have been safe enough, for the snow served as a covering, and kept in the natural heat of the animals.

The old sailor, who made a first-rate dog-driver, tried his beasts with the oily flesh of the seal, and found, to his joyful surprise, that they ate it greedily. The Doctor said he was not astonished at this, as in North Norway the cattle were fed chiefly on fish; and he thought that what would satisfy an herbivorous horse might surely content an omnivorous dog.

The whole party were soon buried in deep sleep,

for they were fairly overcome with fatigue. Johnson awoke his companions early next morning, and the march was resumed in haste. Their provisions would only hold out three days longer.

The sky was magnificent; the atmosphere extremely clear, and the temperature very low. The sun rose in the form of a long ellipse, owing to refraction, which made his horizontal diameter appear twice the length of his vertical.

The Doctor, gun in hand, wandered away from the others, braving the solitude and the cold in the hope of discovering game. He had only sufficient powder left to load three times, and he had just three balls. That was little enough should he encounter a bear, for it often takes ten or twelve shots to have any effect on these enormous animals.

But the brave doctor would have been satisfied with humbler game. A few hares or foxes would be a welcome addition to their scanty food; but all that day, even if he chanced to see one, either he was too far away, or he was deceived by refraction, and took a wrong aim. He came back to his companions at night empty-handed.

Next day the route appeared more difficult, and the weary men could hardly drag themselves along. The dogs had devoured even the entrails of the seal, and began to gnaw their traces.

A few foxes passed in the distance, and the doctor lost another ball in attempting to shoot them.

They were forced to come to a halt early in the evening, though the road was illuminated by a splendid Aurora Borealis; for they could not put one foot before the other.

Their last meal, on the Sunday evening was a very sad one—if no providential help came, their doom was sealed.

Johnson set a few traps before going to sleep, though he had no baits to put inside them. He was very disappointed to find them all empty in the morning, and was returning gloomily to the hut when he perceived a bear of huge dimensions. The old sailor took it into his head that Heaven had sent this beast specially for him to kill; and without waking his companions, he seized the doctor's gun, and was soon in pursuit of his prey.

On reaching the right distance, he took aim; but, just as his finger touched the trigger, he felt his arm tremble. His thick gloves hampered him, and, flinging them hastily off, he took up the gun with a firmer grasp. But what a cry of agony escaped him! The skin of his fingers stuck to the gun as if it had been red-hot, and he was forced to let it drop. The sudden fall made it go off, and the last ball was discharged in the air.

The Doctor ran out at the noise of the report, and understood all at a glance. He saw the animal walking quietly off, and poor Johnson forgetting his sufferings in his despair.

"I am a regular milksop!" he exclaimed, "a cry-baby, that can't stand the least pain! And at my age, too!"

"Come, Johnson; go in at once or you will be frost-

bitten. Look at your hands—they are white already! Come, come this minute."

"I am not worth troubling about, Dr. Clawbonny," said the old boatswain. "Never mind me!"

"But you must come in, you obstinate fellow. Come, now, I tell you; it will be too late presently."

At last he succeeded in dragging the poor fellow into the tent, where he made him plunge his hands into a bowl of water, which the heat of the stove kept in a liquid state. Johnson's hands had hardly touched it before it froze immediately."

"You see it was high time you came in; I should have been forced to amputate soon," said the Doctor.

THAT morning they had no breakfast. Pemmican and salt beef were both gone. Not a crumb of biscuit remained. They were obliged to content themselves with half a cup of hot coffee, and start off again.

They scarcely went three miles before they were compelled to give up for the day. They had no supper but coffee, and the dogs were so ravenous that they were almost devouring each other.

Johnson fancied he could see the bear following them in the distance, but he made no remark to his companions. Sleep forsook the unfortunate men, and their eyes grew wild and haggard.

Tuesday morning came, and it was thirty-four hours since they had tasted a morsel of food. Yet these brave, stout-hearted men continued their march, sustained by their superhuman energy of purpose. They pushed the sled themselves, for the dogs could no longer draw it.

At the end of two hours they sank exhausted. Hatters urged them to make a fresh attempt, but his entreaties and supplications were powerless; they could go no further.

"Well, at any rate," he said, "I won't die of cold if I must of hunger." He set to work to hew out a hut in an iceberg, aided by Johnson, and really looked like men digging their own tomb.

It was hard labor, but at length the task was accomplished. The little house was ready, and the miserable men took up their abode in it.

In the evening, while the others lay motionless, a sort of hallucination came over Johnson, and he began ravaging about bears.

The Doctor roused himself from his torpor, and asked the old man what he meant, and what bear he was talking about.

"The bear that is following us," replied Johnson.

"A bear following us?"

"Yes, for the last two days!"

"For the last two days! You have seen him?"

"Yes, about a mile to leeward."

"And you never told me, Johnson!"

"What was the good!"

"True enough," said the Doctor; "we have not a single ball to send after him!"

"No, not even a bit of iron!"

The Doctor was silent for a minute, as if thinking. Then he said:

"Are you quite certain the animal is following us?"

"Yes, Dr. Clawbonny, he is reckoning on a good feed of human flesh!"

"Johnson!" exclaimed the Doctor, grieved at the despairing mood of his companion.

"He is sure enough of his meal!" continued the poor fellow, whose brain began to give way. "He must be hungry, and I don't see why we should keep him waiting."

"Johnson, calm yourself!"

"No, Dr. Clawbonny, since we must die, why prolong the sufferings of the poor beast? He is famished like ourselves. There are no seals for him to eat, and Heaven sends him men! So much the better for him, that's all!"

Johnson was fast going mad. He wanted to get up and leave the hut, and the Doctor had great difficulty in preventing him. That he succeeded at all was not through strength, but by saying in a tone of the most absolute conviction, "Johnson, I shall kill that bear to-morrow!"

"To-morrow!" said Johnson, as if waking up from some bad dream.

"Yes, to-morrow."

"You have no ball!"

"I'll make one."

"You have no lead!"

"No, but I have mercury."

So saying, he took the thermometer, which stood at 50° above zero, and went outside and laid it on a block of ice. Then he came in again and said, "To-morrow! Go to sleep, and wait till the sun rises."

With the first streak of dawn next day the Doctor and Johnson rushed out to look at the thermometer. All the mercury had frozen into a compact cylindrical mass. The Doctor broke the tube and took it out. Here was a hard piece of metal ready for use.

"It is wonderful, Dr. Clawbonny; you ought to be a proud man."

"Not at all, my friend, I am only gifted with a good memory, and I have read a great deal."

"How did that help you?"

"Why, I just happened to recollect a fact related by Captain Ross in his voyages. He states that they pierced a plank an inch thick with a bullet made of mercury. Oil would even have suited my purpose, for, he adds, that a ball of frozen almond oil splits through a post without breaking in pieces."

"It is quite incredible!"

"But it is a fact, Johnson. Well, come now, this bit of metal may save our lives. We'll leave it exposed to the air a little while, and go and have a look for the bear."

Just then Hatteras made his appearance, and the Doctor told him his project, and showed him the mercury.

The captain grasped his hand silently, and the three hunters went off in quest of their game.

The weather was very clear, and Hatteras, who was a little ahead of the others, speedily discovered the bear about three hundred yards distant, sitting on his hind quarters sniffing the air.

"There he is!" he exclaimed.

"Hush!" cried the Doctor.

But the enormous quadruped, even when he perceived his antagonists, never stirred, and displayed neither fear nor anger. It would not be easy to get near him, however, and Hatteras said:

"Friends, this is no idle sport; our very existence is at stake; we must act prudently."

"Yes," replied the Doctor, "for we have but the one shot to depend upon. We must not miss, for once the beast takes to his heels, we have lost all chance of him. He would outstrip a hare in fleetness!"

"We must go right up to him," said Johnson; "that is the only way. It is risking one's life, of course; but what does that matter? Let me risk mine."

"No, I wish to take the risk myself," said the Doctor.

"I am the one to go," said Hatteras, quietly.

"But, captain, is your life not more necessary for the safety of all than a stupid man's like mine?"

"No, Johnson, let me go. I'll not risk myself unnecessarily. Besides, I may possibly need your assistance."

"Hatteras," asked the Doctor, "do you mean to walk right up to the bear?"

"If I were certain of getting a shot at him, I would do that if it cost me my head; but he might scamper off at my approach. No, Bruin is a cunning fellow, and we must try and be a match for him."

"What plan have you got in your head?"

"To get within ten paces of him without letting him suspect it."

"And how will you manage that?"

"Well, my scheme is simple enough, though rather dangerous. You kept the skin of the seal you killed, didn't you?"

"It is on the ledge."

"All right! Let us get back to the hut, and leave Johnson here to watch."

Away they went, while the old boatswain slipped behind hummock, which completely hid him from the bear, who continued still in the same place and in the same position.

CHAPTER V The Seal and the Bear

"YOU know, Doctor," said Hatteras, as they returned to the hut, "the polar bears subsist almost entirely on seals. They'll lie in wait for them beside the crevasses for whole days, ready to strangle them the moment their heads appear above the surface. It is not likely, then, that a bear will be frightened of a seal."

"I think I see what you are after, but it is dangerous."

"Yes, but there is more chance of success than in trying any other plan, so I mean to risk it. I am going to dress myself in the seal's skin, and creep along the ice. Come, don't let us lose time. Load the gun and give it to me."

The Doctor could not say anything, for he would have done the same himself, so he followed Hatteras silently to the sled, taking with him a couple of hatches for his own and Johnson's use.

Hatteras soon made his toilette, and slipped into the skin, which was big enough to cover him almost entirely.

"Now, then, give me the gun," he said, "and you be off to Johnson. I must try and steal a march on my adversary."

"Courage, Hatteras!" said the Doctor, handing him the weapon, which he had carefully loaded meanwhile.

"Never fear! but be sure you don't show yourselves till I fire."

The Doctor soon joined the old boatswain behind the hummock, and told him what they had been doing. The bear was still there, but moving restlessly about, as if he felt the approach of danger.

In a quarter of an hour or so the seal made his appearance on the ice. He had gone a good way round, so as to come on the bear by surprise, and every movement was so perfect an imitation of a seal that even the Doctor would have been deceived if he had not known it was Hatteras.

"It is capital!" said Johnson, in a low voice.

The bear had instantly caught sight of the supposed seal, for he gathered himself up, preparing to make a spring as the animal came nearer, apparently seeking to return to his native element, and unaware of the enemy's proximity. Bruin went to work with extreme prudence, though his eyes glared with greedy desire to clutch the coveted prey, for he had probably been fasting a month, if not two. He allowed his victim to get within ten paces of him, and then sprang forward with a tremendous bound, but stopped short, stupefied and frightened, within three steps of Hatteras, who started up that moment, and, throwing off his disguise, knelt on one knee, and aimed straight at the bear's heart. He fired, and the huge monster rolled back on the ice.

"Forward! Forward!" shouted the Doctor, hurrying towards Hatteras, for the bear had reared on his hind legs, and was striking the air with one paw and tearing up the snow to staunch his wound with the other.

Hatteras never moved, but waited, knife in hand. He had aimed well, and fired with a sure and steady aim. Before either of his companions came up, he had plunged his knife in the animal's throat, and made an end of him.

"Hurrah! Bravo!" shouted Johnson and the Doctor, but Hatteras was as cool and unexcited as possible, and stood with folded arms gazing at his prostrate foe.

"It is my turn now," said Johnson.

"It is a good thing the bear is killed, but if we leave him out here much longer, he will get as hard as a stone, and we shall be able to do nothing with him."

He began forthwith to strip the skin off, and a fine business it was, for the enormous quadruped was almost as large as an ox. It measured nearly nine feet long, and as much round, and the great tusks in his jaws were three inches long.

On cutting the carcass open, Johnson found nothing but water in the stomach. The beast had evidently had no food for a long time, yet it was very fat, and weighed fifteen hundred pounds. The hunters were so

famished that they had hardly patience to carry home the flesh to be cooked, and it needed all the Doctor's persuasion to prevent them eating it raw.

On entering the hut, each man with a load on his back, Clawbonny was struck with the coldness that pervaded the atmosphere. On going up to the stove he found the fire black out. The exciting business of the morning had made Johnson neglect his accustomed duty of replenishing the stove.

The Doctor tried to blow the embers into a flame, but finding he could not even get a red spark, he went out to the sled to fetch tinder, and get the steel from Johnson.

THE old sailor put his hand into his pocket, but was surprised to find the steel missing. He felt in the rest of his pockets, but it was not there. Then he went into the hut again, and shook the blanket he had slept in all night, but his search was still unsuccessful.

He went back to his companions and said:

"Are you sure, Doctor, you haven't the steel?"

"Quite, Johnson."

"And you haven't it either, captain?"

"Not I!" replied Hatteras.

"It has always been in your keeping," said the Doctor.

"Well, I have not got it now," exclaimed Johnson, turning pale.

"Not got the steel!" repeated the Doctor, shuddering involuntarily at the bare idea of its loss, for it was all the means they had of procuring a fire.

"Look again, Johnson," he said.

The boatswain hurried to the only remaining place he could think of, the hummock where he had stood to watch the bear. But the missing treasure was nowhere to be found, and the old sailor returned in despair.

Hatteras looked at him, but no word of reproach escaped his lips. He only said:

"This is a serious business, Doctor."

"It is indeed!" said Clawbonny.

"We have not even an instrument, some glass that we might take the lens out of, and use like a burning glass."

"No, and it is a great pity, for the sun's rays are quite strong enough just now to light our tinder."

"Well," said Hatteras, "we must just appease our hunger with the raw meat, and set off again as soon as we can, to try to discover the ship."

"Yes," replied Clawbonny, speaking to himself, absorbed in his own reflections. "Why not? We might try."

"What are you dreaming about?" asked Hatteras.

"An idea has just occurred to me."

"An idea come into your head, Doctor," exclaimed Johnson; "then we are saved!"

"Will it succeed? That's the question."

"What's your project?" said Hatteras.

"We want a lens; well, let us make one."

"How?" asked Johnson.

"With a piece of ice."

"What? Do you think that would do?"

"Why not? All that is needed is to collect the sun's rays into one common focus, and ice will serve that purpose as well as the finest crystal."

"Is it possible?" said Johnson.

"Yes, only I should like fresh-water ice; it is harder and more transparent than the other."

"There it is to your hand, if I am not much mistaken," said Johnson, pointing to a hummock close by. "I fancy that is fresh water, from the dark look of it, and the green tinge."

"You are right. Bring your hatchet, Johnson."

A good-sized piece was soon cut off, about a foot in diameter, and the Doctor set to work. He began by chopping it into rough shape with the hatchet; then he operated upon it more carefully with his knife, making as smooth a surface as possible, and finished the polishing process with his fingers, rubbing away until he had obtained as transparent a lens as if it had been made of magnificent crystal.

The sun was shining brilliantly enough for the Doctor's experiment. The tinder was fetched and held beneath the lens so as to catch the rays in full power. In a few seconds it took fire, to Johnson's delight.

He danced about like an idiot, almost beside himself with joy, and shouted, "Hurrah! hurrah!" while Clawbonny hurried back to the hut and rekindled the fire. The stove was soon roaring, and it was not many minutes before the savory odor of broiled bear-steak roused Bell from his torpor.

What a feast this meal was to the poor starving men may be imagined. The Doctor, however, counseled moderation in eating, and set the example himself.

"This is a glad day for us," he said, "and we have no fear of wanting food all the rest of our journey. Still we must not forget we have further to go yet, and I think the sooner we start the better."

"We cannot be far off now," said Altamont, who could almost articulate perfectly again; "we must be within forty-eight hours' march of the *Porpoise*."

"I hope we'll find something there to make a fire with," said the Doctor, smiling. "My lens does well enough at present; but it needs the sun, and there are plenty of days when he does not make his appearance here, within less than seven degrees of the Pole."

"Less than seven degrees!" repeated Altamont, with a sigh; "yes, my ship went further than any other has ever ventured."

"It is time we started," said Hatteras, abruptly.

"Yes," replied the Doctor, glancing uneasily at the two captains.

The dogs were speedily harnessed to the sled, and the march resumed.

As they went along, the Doctor tried to get out of Altamont the real motive that had brought him so far north. But the American made only evasive replies, and Clawbonny whispered in old Johnson's ear: "Two men we've got that need looking after."

"You are right," said Johnson.

Hatteras never says a word to this American, and I must say the man has not shown himself very grate-

ful for having been saved. I am here, fortunately."

"Dr. Clawbonny," said Johnson, "now this Yankee has come back to life again, I must confess I don't much like the expression of his face."

"I am much mistaken if he does not suspect the projects of Hatteras."

"Do you think his own were similar?"

"Who knows! These Americans, Johnson, are bold, daring fellows. It is likely enough an American would try to do as much as an Englishman."

"Then you think that Altamont—"

"I think nothing about it, but his ship is certainly on the road to the North Pole."

"But didn't Altamont say that he had been caught among the ice, and dragged there irresistibly?"

"He said so, but I fancied there was a peculiar smile on his lips while he spoke."

"Hang it! It would be a bad job, Dr. Clawbonny, if any feeling of rivalry came between two men of their stamp."

"Heaven forfend! for it might involve the most serious consequences, Johnson."

"I hope Altamont will remember he owes his life to us?"

"But do we not owe ours to him now? I grant, without us, he would not be alive at this moment; but without him and his ship, what would become of us?"

"Well, Dr. Clawbonny, you are here to keep things straight anyhow, and that is a blessing."

"I hope I may manage it, Johnson."

The journey proceeded without any fresh incident, but on the Saturday morning the travelers found themselves in a region of quite an altered character. Instead of the wide, smooth plain of ice that had hitherto stretched before them, overturned icebergs and broken hummocks covered the horizon; while the frequent blocks of fresh-water ice showed that some coast was near.

Next day, after a hearty breakfast off the bear's paws, the little party continued their route; but the road became toilsome and fatiguing. Altamont lay watching the horizon with feverish anxiety—an anxiety shared by all his companions; for, according to the last reckoning made by Hatteras, they were now exactly in latitude 83° 35' and longitude 120° 15', and the question of life or death would be decided before the day was over.

At last, about two o'clock in the afternoon, Altamont started up with a shout that arrested the whole party, and pointing to a white mass that no eye but his could have distinguished from the surrounding icebergs, exclaimed in a loud, ringing voice, "*The Porpoise*."

CHAPTER VI The Porpoise

IT was the 24th of March, and Palm Sunday, a bright, joyous day in many a town and village of the Old World; but in this desolate region what mournful silence prevailed! No willow branches

here with their silvery blossoms—not even a single withered leaf to be seen—not a blade of grass!

Yet this was a glad day to the travelers, for it promised them speedy deliverance from the death that had seemed so inevitable. They hastened onward, the dogs put forth renewed energy, till, before long, they arrived at the ship.

The *Porpoise* was completely buried under the snow. All her masts and rigging had been destroyed in the shipwreck, and she was lying on a bed of rocks, entirely on her side. They had to knock away fifteen feet of ice before they could even catch a glimpse of her, and it was not without great difficulty that they managed to get on board, and made the welcome discovery that the provision stores had not been visited by any four-footed marauders. The ship, obviously, was not habitable, however.

"Never mind!" said Hatteras, "we must build a snow-house, and make ourselves comfortable on land."

"Yes, but we need not hurry over it," said the Doctor; "let us do it well while we're about it, and for a time we can make shift on board; for we must build a good, substantial house, that will protect us from the bears as well as from the cold. I'll undertake to be the architect, and you shall see what a first-rate job I'll make of it."

"I don't doubt your talents, Dr. Clawbonny," replied Johnson; "but, meantime, let us see about taking up our abode here and making an inventory of the stores we find. There does not seem to be a boat visible of any description, and I fear these timbers are in too bad a condition to build a new ship out of them."

"I don't know about that," returned Clawbonny, "time and thought do wonders; but our first business is to build a house, and not a ship; one thing at a time, I propose."

"Quite right, too," said Hatteras.

They returned to the sled, to communicate the result of their investigation to Bell and Altamont; and about four in the afternoon the five men installed themselves as well as they could on the wreck. Bell had managed to make a tolerably level floor with planks and spars; the stiffened cushions and hammocks were placed round the stove to thaw, and were soon fit for use. Altamont, with the Doctor's assistance, got on board without much trouble, and a sigh of satisfaction escaped him—a sigh which to Johnson's ears boded no good.

The rest of the day was given to repose, and they wound up with a good supper off the remains of the bear, backed by a plentiful supply of biscuit and hot tea.

It was late next morning before Hatteras and his companions woke, for their minds were not burdened now with any solicitude about the morrow, and they might sleep as long as they pleased.

"Well, it is something, at all events," said the Doctor, rousing himself and stretching his arms. "for a fellow not to need to ask where he is going to find his next bed and breakfast."

"Let us see what there is on board before we say too much," said Johnson.

The *Porpoise* had been thoroughly equipped and provisioned for a long voyage, and on making an inventory of what stores remained, they found 6,150 lbs. of flour, fat, and raisins; 2,000 lbs. of salt beef and pork; 1,500 lbs. of pemmican; 700 lbs. of sugar, and the same of chocolate; a chest and a half of tea, weighing 96 lbs.; 500 lbs. of rice; several barrels of preserved fruits and vegetables; a quantity of lime-juice, with all sorts of medicines, and 300 gallons of rum and brandy. There was also a large supply of gunpowder, ball, and shot, and coal and wood in abundance.

Altogether, there was enough to last those five men for more than two years, and all fear of death from starvation or cold was at an end.

"Well, Hatteras, we're sure of enough to live on now," said the Doctor, "and there is nothing to hinder us reaching the Pole."

"The Pole!" echoed Hatteras.

"Yes, why not? Can't we push our way overland in the summer months?"

"We might overland; but how could we cross water?"

"Perhaps we may be able to build a boat out of some of the ship's planks."

"Out of an American ship!" exclaimed the captain, contemptuously.

Clawbonny was prudent enough to make no reply, and presently changed the conversation by saying:

"Well, now we have seen what we have to depend upon, we must begin our house and store-rooms. We have materials enough at hand; and, Bell, I hope you are going to distinguish yourself," he added.

"I am ready, Dr. Clawbonny," replied Bell; "and as for material, there is enough for a town here, with houses and streets."

"We don't require that; we'll content ourselves with imitating the Hudson Bay Company. They entrench themselves in fortresses against the Indians and wild beasts. That's all we need—a house one side and stores the other, with a wall and two bastions. I must try to make a plan."

"Ah! Doctor, if you undertake it," said Johnson, "I'm sure you'll make a good thing of it."

"Well, the first part of the business is to go and choose the ground. Will you come with us, Hatteras?"

"I'll trust all that to you, Doctor," replied the captain. "I'm going to look along the coast."

Altamont was too feeble yet to take part in any work, so he remained on the ship, while the others commenced to explore the unknown continent. On examining the coast, they found that the *Porpoise* was in a sort of bay bristling with dangerous rocks, and that to the west, far as the eye could reach, the sea extended, entirely frozen now, though if Belcher and Penny were to be believed, open during the summer months. Towards the north, a promontory stretched out into the sea, and about three miles away was an island of moderate size. The roadstead thus formed would have afforded safe anchorage to ships, but for the difficulty of entering it. A considerable distance

inland there was a solitary mountain, about 3,000 feet high, by the Doctor's reckoning.

Half-way up the steep rocky cliffs that rose from the shore, they noticed a circular plateau, open on three sides to the bay and sheltered on the fourth by a precipitous wall, 120 feet high. This seemed to the Doctor the very place for this house.

THEY were soon convinced they could not have a better foundation, and resolved to commence operations forthwith.

This preparatory work occupied the whole of Monday Tuesday, and Wednesday. At last they came to hard granite, close in grain, and containing garnets and felspar crystals, which flew out with every stroke of the pickax.

The dimensions and plan of the snow-house were then settled by the Doctor. It was to be divided into three rooms, as all they needed was a bedroom, sitting-room, and kitchen. The sitting-room was to be in the middle, the kitchen to the left, and the bedroom to the right.

For five days they toiled unremittingly. There was plenty of material, and the walls required to be thick enough to resist summer thaws. Already the house began to present an imposing appearance. There were four windows in front, made of splendid sheets of ice, in Esquimaux fashion, through which the light came in softly.

Outside there was a long covered passage between the two windows of the sitting-room. This was the entrance hall, and it was shut in by a strong door taken from the cabin of the *Porpoise*. The Doctor was highly delighted with his performance when all was finished, for though it would have been difficult to say to what style of architecture it belonged, it was strong and that was the chief thing.

The next business was to move in all the furniture of the *Porpoise*. The beds were brought first and laid down round the large stove in the sleeping room; then came chairs, tables, arm-chairs, cupboards, and benches for the sitting-room, and finally the ship furnaces and cooking utensils for the kitchen. Sails spread on the ground did duty for carpets, and also served for inner doors.

The walls of the house were over five feet thick, and the windows resembled portholes for cannon. Every part was as solid as possible, and what more was wanted? Yet if the Doctor could have had his way, he would have made all manner of ornamental additions, in humble imitation of the Ice Palace built in St. Petersburg in January, 1740, of which he had read an account.

It was on Easter Sunday, the 31st of March, when the travelers installed themselves in their new abode, and after holding divine service in the sitting-room, they devoted the remainder of the day to rest.

Next morning they set about building the store-houses and powder magazine. This took a whole week longer, including the time spent in unloading the vessel, which was a task of considerable difficulty, as the temperature was so low that they could not work

for many hours at a time. At length, on the 8th of April, provisions, fuel, and ammunition were all safe on *terra firma*, and deposited in their respective places. A sort of kennel was constructed at a little distance from the house for the Greenland dogs, which the Doctor dignified by the name of "Dog Palace." Duk shared his master's quarters.

All that now remained to be done was to put a parapet right round the plateau by way of fortification. By the 15th this was also completed, and the snow-house might bid defiance to a whole tribe of Esquimaux, or any other hostile invaders, if indeed any human beings whatever were to be found on this unknown continent. The shipwrecked sailors of the *Porpoise* and *Forward* seemed to be the first whose feet had ever trod this lone region.

CHAPTER VII An Important Discussion

WHILE all these preparations for winter were going on, Altamont was fast regaining strength. His vigorous constitution triumphed, and he was able to lend a helping hand in the unloading of the ship. He was a true type of the American, a shrewd, intelligent man, full of energy and resolution; enterprising, bold, and ready for anything.

The *Porpoise* had been equipped and sent out by a company of wealthy merchants belonging to the States, at the head of which was the famous Grinnell.

There were many points of resemblance between Altamont and Hatteras, but no affinities. Indeed, any similarity that there was between them, tended rather to create discord than to make the men friends. With a greater show of frankness, he was in reality far more deep and crafty than Hatteras. He was more free and easy, but not so true-hearted, and somehow his apparent openness did not inspire such confidence as did the Englishman's gloomy reserve. The Doctor was in constant dread of a collision between the rival captains. Yet one must command inevitably, which should it be! Hatteras had the men, but Altamont had the ship, and it was hard to say whose was the better right.

It required all the Doctor's tact to keep things smooth, for the simplest conversation threatened to lead to strife. At last, in spite of all his endeavors, an outbreak occurred on the occasion of a grand banquet by way of "house-warming," when the new habitation was completed.

This banquet was Dr. Clawbonny's idea. He was head cook, and distinguished himself by the concoction of a wonderful pudding, which would positively have done no dishonor to the *cuisine* of the Lord Chancellor of England.

Bell most opportunely chanced to shoot a white hare and several ptarmigans, which made an agreeable variety from the pemmican and salt meat.

Clawbonny was master of the ceremonies, and brought in his pudding, adorning himself with the insignia of his office—a big apron, and a knife dangling

at his belt. And as Altamont did not conform to the teetotal *régime* of his English companions, gin and brandy were set on the table after dinner, and the others, by the Doctor's orders, joined him in a glass for once, that the festive occasion might be duly honored.

When the different toasts were being drunk, one was given to the United States, to which Hatteras made no response.

This important business over, the Doctor introduced an interesting subject of conversation by saying: "My friends, it is not enough to have come thus far in spite of so many difficulties; we have something more yet to do. I propose we should bestow a name on this continent, where we have found friendly shelter and rest, and not only on the continent, but on the several bays, peaks, and promontories that we meet with. This has been invariably done by navigators, and is a most necessary proceeding."

"Quite right," said Johnson; "when once a place is named, it takes away the feeling of being castaways."

"Yes," added Bell, "and we might be going on some expedition and obliged to separate, or go out hunting, and it would make it much easier to find one another if each locality had a definite name."

"Very well then," said the Doctor: "since we are all agreed, let us go steadily to work."

Hatteras had taken no part in the conversation as yet, but seeing all eyes fixed on him, he rose at last, and said: "If no one objects, I think the most suitable name we can give our house is that of its skilled architect, the best man among us. Let us call it 'Doctor's House.'"

"Just the thing!" said Bell.

"First rate!" exclaimed Johnson, "Doctor's House!"

"We cannot do better," chimed in Altamont. "Hurrah for Dr. Clawbonny!"

Three hearty cheers were given, in which Dub joined lustily, barking his loudest.

"It is agreed, then" said Hatteras, "that this house is to be called 'Doctor's House.'"

The Doctor, almost overcome by his feelings, modestly protested against the honor; but he was obliged to yield to the wishes of his friends.

"Now, then," said the Doctor, "let us go on to name the most important of our discoveries."

"There is that immense sea which surrounds us, unfurrowed as yet by a single ship."

"A single ship!" repeated Altamont. "I think you have forgotten the *Porpoise*, and yet she certainly did not get here overland."

"Well, it would not be difficult to believe she had,"

replied Hatteras, "to see what she lies on at present."

"True, enough, Hatteras," said Altamont, in a piqued tone; "but, after all, is not that better than being blown to atoms, like the *Forward*?"

Hatteras was about to make some sharp retort, but Clawbonny interposed. "It is not a question of ships, my friends," he said, "but of a new sea."

"It is no new sea," returned Altamont; "it is in every

Polar chart, and has a name already. It is called the Arctic Ocean, and I think it would be very inconvenient to alter its designation. Should we find out by-and-by, that, instead of being an ocean it is only a strait or gulf, it will be time enough to alter it then."

"So be it," said Hatteras.

"Very well, that is an understood thing, then," said the Doctor, almost regretting that he had started a discussion so pregnant with national rivalries.

"Let us proceed with the continent where we find ourselves at present," resumed Hatteras. "I am not aware that any name whatever has been affixed to it, even in the most recent charts."

He looked at Altamont as he spoke, who met his gaze steadily, and said: "Possibly you may be mistaken again, Hatteras."

"Mistaken! What! This unknown continent; this virgin soil—"

"Has already a name," replied Altamont, coolly.

Hatteras was silent, but his lip quivered.

"And what name has it, then?" asked the Doctor, rather astonished at Altamont's affirmation.

"**M**Y dear Clawbonny," replied the American, "it is the custom, not to say the right, of every navigator to christen the soil on which he is the first to set foot. It appears to me, therefore, that it is my privilege and duty on this occasion to exercise my prerogative, and—"

"But, sir," interrupted Johnson, rather nettled at his *sang froid*.

"It would be a difficult matter to prove that the *Porpoise* did not come here, even supposing she reached this coast by land," continued Altamont, without noticing Johnson's protest. "The fact is indisputable," he added, looking at Hatteras.

"I dispute the claim," said the Englishman, restraining himself, by a powerful effort. "To name a country, you must first discover it, I suppose, and that you certainly did not do. Besides, but for us, where would you have been, sir, at this moment, pray? Lying twenty feet deep under the snow."

"And without me, sir," retorted Altamont, hotly, "without me and my ship, where would you all be at this moment? Dead, from cold and hunger."

"Come, come, friends," said the Doctor, "don't go to words; all that can be easily settled. Listen to me."

"Mr. Hatteras," said Altamont, "is welcome to name whatever territories he may discover, should he succeed in discovering any; but this continent belongs to me. I should not even consent to its having two names like Grinnell's Land, which is also called Prince Albert's Land, because it was discovered almost simultaneously by an Englishman and an American. This is quite another matter; my right of priority is incontestable. No ship before mine ever touched this shore; no foot before mine ever trod this soil. I have given it a name, and that name it shall keep."

"And what is that name?" inquired the Doctor.

"New America," replied Altamont.

Hatteras trembled with suppressed passion, but by a

violent effort he barely managed to restrain himself.

"Can you prove to me," said Altamont, "that an Englishman has set foot here before an American?"

Johnson and Bell said nothing, though quite as much offended as the captain by Altamont's imperious tone.

For a few minutes there was an awkward silence, which the Doctor broke by saying: "My friends, the highest human law is justice. It includes all others. Let us be just, then, and don't let any bad feeling get in among us. The priority of Altamont seems to me indisputable. We will take our revenge by and by, and England will get her full share in our future discoveries. Let the name New America stand for the continent itself, but I suppose Altamont has not yet disposed of all the bays, and capes, and headlands it contains, and I imagine there will be nothing to prevent us calling this bay Victoria Bay?"

"Nothing whatever, provided that yonder cape is called Cape Washington," replied Altamont.

"You might choose a name, sir," exclaimed Hatteras, almost beside himself with passion, "that is less offensive to an Englishman."

"But not one which sounds so sweet to an American," retorted Altamont, proudly.

"Come, come," said the Doctor, "no discussion on that subject. An American has a perfect right to be proud of his great countryman! Let us honor genius wherever it is met with; and since Altamont has made his choice, let us take our turn next; let the captain—"

"Doctor!" interrupted Hatteras, "I have no wish that my name should figure anywhere on this continent, seeing that it belongs to America."

"Is this your unalterable determination?" asked Clawbonny.

"It is."

The Doctor did not insist further.

"Very well, we'll have it to ourselves then," he continued, turning to Johnson and Bell. "We'll leave our traces behind us. I propose that the island we see out there, about three miles away from the shore, should be called Johnson's Island, in honor of our boatswain."

"Oh, Dr. Clawbonny," began Johnson, in no little confusion.

"And that mountain that we discovered in the west we will call Mount Bell, if our carpenter is willing."

"It is doing me too much honor," replied Bell.

"It is simple justice," returned the Doctor.

"Nothing could be better," said Altamont.

"Now then, all we have to do is to christen our fort," said the Doctor. "About that there will be no discussion, I hope, for it is neither to our gracious sovereign Queen Victoria, nor to Washington, that we owe our safety and shelter, but to God, who brought about our meeting, and by so doing saved us all. Let our little fort be called Fort Providence."

"Your remarks are just," said Altamont; "no name could be more suitable."

"Fort Providence," added Johnson, "sounds well too. In our future excursions, then, we shall go by Cape Washington to Victoria Bay, and then to Fort Providence, where we shall find haven at Doctor's House."

"The business is settled then so far," resumed the Doctor. "As our discoveries multiply we shall have other names to give; but I trust, friends, we shall have no disputes about them, for placed as we are, we need all the help and love we can give each other. Let us be strong by being united. Who knows what dangers we may have to brave, and what sufferings we may have to endure before we see our native land once more. Let us be one in heart though five in number, and let us lay aside all feelings of rivalry. Such feelings are bad enough at all times, but among us they would be doubly wrong. You understand me, Altamont, and you, Hatteras?"

Neither of the captains replied but the Doctor took no notice of their silence, and went on to speak of other things. Sundry expeditions were planned to forage for fresh food. It would soon be spring, and hares and partridges, foxes, and bears, would re-appear. So it was determined that part of every day should be spent in hunting and exploring this unknown continent of New America.

CHAPTER VIII

An Excursion to the North of Victoria Bay

NEXT morning Clawbonny was out by dawn of day. Clambering up the steep, rocky wall, against which the Doctor's House leaned, he succeeded, though with considerable difficulty, in reaching the top, which he found terminated abruptly in a sort of truncated cone. From this elevation there was an extensive view over a vast tract of country, which was all disordered and convulsed as if it had undergone some volcanic commotion. Sea and land, as far as it was possible to distinguish one from the other, were covered with a sheet of ice.

A new project struck the Doctor's mind, which was soon matured and ripe for execution. He lost no time in going back to the snow house, and consulting over it with his companions.

"I have got an idea," he said; "I think of constructing a lighthouse on top of that cone above our heads."

"A lighthouse!" they all exclaimed.

"Yes a lighthouse. It would be a double advantage. It would be a beacon to guide us in distant excursions, and also serve to illuminate our *plateau* in the long dreary winter months.

"There is no doubt," replied Altamont, "of its utility; but how would you contrive to make it?"

"With one of the lanterns out of the *Porpoise*," replied the Doctor.

"All right; but how will you feed your lamp? With seal oil?"

"No, seal oil would not give nearly sufficient light. It would scarcely be visible through the fog."

"Are you going to try to make gas out of our coal?"

"No, not that either, for gas would not be strong enough; and, worse still, it would waste our combustibles."

"Well," replied Altamont; "I'm at a loss to see how you—"

"Oh, I'm prepared for everything after the mercury bullet, and the ice lens, and Fort Providence. I believe Dr. Clawbonny can do anything," exclaimed Johnson.

"Come, Clawbonny, tell us what your light is to be, then," said Altamont.

"That's soon told," replied Clawbonny. "I mean to have an electric light."

"An electric light?"

"Yes, why not? Haven't you a galvanic battery on board your ship?"

"Yes."

"Well, there will be no difficulty then in producing an electric light that will cost nothing, and be far brighter."

"First-rate!" said Johnson; "let us set to work at once."

"By all means. There is plenty of material. In an hour we can raise a pillar of ice ten feet high, and that is quite enough."

Away went the Doctor, followed by his companions, and the column was soon erected and crowned with a ship lantern. The conducting wires were properly adjusted within it, and the battery with which they communicated was fixed up in the sitting-room, where the warmth of the stove would protect it from the action of the frost. As soon as it grew dark the experiment was made, and proved a complete success. An intense brilliant light streamed from the lantern and illuminated the entire plateau and the plains beneath.

Johnson could not help clapping his hands, half beside himself with delight.

"Well, I declare, Dr. Clawbonny," he exclaimed, "you're our sun now."

"One must be a little of everything, you know," was Clawbonny's modest reply.

It was too cold, however, even to stand admiring more than a minute, and the whole party were glad enough to getindoors again, and tuck themselves up in their warm blankets.

A REGULAR course of life commenced now, though the uncertain weather and frequent changes of temperature made it sometimes impracticable to venture outside the hut at all, and it was not till the Saturday after the installation, that a day came that was favorable enough for a hunting excursion: Bell, and Altamont, and the Doctor determined to take advantage of it, and try to replenish their stock of provisions.

They started very early in the morning, each armed with a double-barreled gun and plenty of powder and shot, a hatchet, and a snow knife.

The weather was cloudy, but Clawbonny put the galvanic battery in action before he left, and the bright rays of the electric light did duty for the glorious orb of day, and in truth was no bad substitute, for the light was equal to three thousand candles, or two hundred gas burners.

It was intensely cold, but dry, and there was a little or no wind. The hunters set off in the direction of Cape Washington, and the hard snow so favored the

march, that in three hours they had gone fifteen miles, Duk jumping and barking beside them all the way. They kept as close to the coast as possible, but found no trace of human habitation, and indeed scarcely a sign of animal life. A few snow birds, however, darting to and fro, announced the approach of spring, and the return of the animal creation. The sea was still entirely frozen over, but it was evident, from the open breathing holes in the ice, that the seals had been quite recently on the surface. In one part the holes were so numerous that the Doctor said to his companions that he had no doubt that when summer came, they would be seen there in hundreds, and would be easily captured, for on unfrequented shores they were not so difficult of approach. But once frighten them and they all vanish as if by enchantment, and never return to the spot again.

"Inexperienced hunters," he said, "have often lost a whole shoal by attacking them *en masse*, with noisy shouts, instead of singly and silently."

"Is it for the oil or skin that they are most hunted?"

"Europeans hunt them for the skin, but the Esquimaux eat them. They live on seals, and nothing is so delicious to them as a piece of the flesh dipped in the blood and oil. After all, cooking has a good deal to do with it. I could dress you seal cutlets you would not turn your nose up at, except for their black appearance."

"We'll set you to work on it," said Bell, "and I'll eat as much as you like, to please you."

"My good Bell, you mean to say to please yourself; but your voracity would never equal the Greenlanders', for they devour from ten to fifteen pounds of meat a day."

"Fifteen pounds!" said Bell. "What stomachs!"

"Arctic stomachs," replied the Doctor, "are prodigious; they can expand at will, and I may add, contract at will; so that they can endure starvation quite as well as abundance. When an Esquimaux sits down to dinner he is quite thin, and by the time he has finished he is so corpulent you would hardly recognize him. But then we must remember that one meal sometimes has to last a whole day."

"This voracity must be peculiar to the inhabitants of cold countries," said Altamont.

"I think it is," replied the Doctor. "In the Arctic regions people must eat enormously; it is not only one of the conditions of strength, but of existence. The Hudson Bay Company always reckoned on this account 8 lbs. of meat to each man a day, or 12 lbs. of fish, or 2 lbs. of pemmican.

"Invigorating regimen, certainly!" said Bell.

"Not so much as you imagine, my friend. An Indian who guzzles like that can't do a whit better day's work than an Englishman, who has his pound of beef and pint of beer."

"Things are best as they are, then, Dr. Clawbonny."

"No doubt of it; and yet an Esquimaux meal may well astonish us. In Sir John Ross's narrative, he states his surprise at the appetites of his guides. He tells us that two of them—just two, mind—devoured a

quarter of a buffalo in one morning. They cut the meat in long narrow strips, and the mode of eating was hold, and then pass it on to the other, or to leave the long ribbons of meat dangling from the mouth, and devour them gradually, like the boa-constrictors, lying at full length on the ground."

"Faugh!" exclaimed Bell, "what disgusting brutes!"

"Every man has his own fashion of dining," remarked the philosophical American.

"Fortunately," said the Doctor.

"Well, if eating is such an imperative necessity in these latitudes, it quite accounts for all the journals of Arctic travelers being so full of eating and drinking."

"You are right," returned the Doctor. "I have been struck by the same fact; but I think it arises not only from the necessity of full diet, but from the extreme difficulty sometimes in procuring it. The thought of food is always uppermost in the mind, and naturally finds mention in the narrative."

"And yet," said Altamont, "if my memory serves me right, in the coldest parts of Norway the peasants do not seem to need such substantial fare. Milk diet is their staple food, with eggs, and bread made of the bark of the birch-tree; a little salmon occasionally, but never meat; and still they are fine hardy fellows."

"It is an affair of organization out of my power to explain," replied Clawbonny; "but I have no doubt that if these same Norwegians were transplanted to Greenland, they would learn to eat like the Esquimaux by the second or third generation. Even if we ourselves were to remain in this blessed country long enough, we should be as bad as the Esquimaux, even if we escaped becoming regular gluttons."

"I declare, Dr. Clawbonny, you make me feel hungry with talking so much about eating," exclaimed Bell.

"Not me!" said Altamont. "It rather sickens me, and makes me loathe the sight of a seal. But, stop, I do believe we are going to have a chance of a dinner off one, for I am much mistaken if that's not something alive lying on those lumps of ice yonder!"

"It is a walrus!" exclaimed the Doctor. "Be quiet, and let us go up to him."

Clawbonny was right; it was a walrus of huge dimensions, disporting himself not more than two hundred

yards away. The hunters separated, going in different directions, so as to surround the animal and cut off all retreat. They crept along cautiously behind the hummocks, and managed to get within a few paces of him unperceived, when they fired simultaneously.

The walrus rolled over, but speedily got up again, and tried to make his escape, but Altamont fell upon him with his hatchet. He made a desperate resistance, but was overpowered by his enemies.

It was a fine animal, measuring more than fifteen feet in length, and would have been worth a good deal for the oil; but the hunters contented themselves with cutting off the most savory parts, and left the rest to the ravens, who had just begun to appear.

Night was drawing on, and it was time to think of returning to Fort Providence. The moon had not yet risen, but the sky was serene and cloudless, and already glittering with myriad stars—magnificent stars.

"Come," said the Doctor, "let us be off, for it is getting late. Our hunting has not been very successful; if a man has found something for his supper, he need not grumble."

They resolved to try a more direct route back by going farther inland, and avoiding the windings of the coast; but, after some hours' walking, they found themselves no nearer Doctor's House, and it was evident that they must have lost their way. The question was raised whether to construct a hut, and rest till morning, or proceed; but Clawbonny insisted on going on, as Hatteras and Johnson would be so uneasy.

"Duk will guide us," he said, "he won't go wrong. His instinct can dispense with star and compass. Just let us keep close behind him."

They did well to trust to Duk, for very speedily a faint light appeared in the horizon.

"There's our lighthouse!" exclaimed the Doctor.

"Do you think it is, Dr. Clawbonny?" said Bell.

"I'm certain of it! Come on faster."

The light became stronger the nearer they approached, and soon they were walking in a bright luminous track, leaving their long shadows behind them on the spotless snow. They hastened forward, and in another half hour they were climbing the ascent to Fort Providence.

END OF PART II

READERS' VOTE OF PREFERENCE

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1.
2.
3.

Why:

Stories I do not like:

1.
2.

Why:

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The MONGOLIANS' RAY

By Volney G. Mathison

WHEN Samuel Jones heard all the racket in the corridor outside of his office, he thought that one of the janitors must have started playing bounce-ball with a couple of ash-cans. Then his door opened, quite suddenly, and in clanked a visitor who was clad from head to foot in massive shining steel armor.

Now, since Samuel Jones, ex-deep-sea wireless-operator and a lot of other things, had become accustomed to being encamped in a mahogany-finished sheet-metal pigeonhole up on the thirty-ninth floor of a New York City office-structure, he was not to be jarred by anything; and if the building were to have capsized with him, he would probably have brushed the broken tiles off his coat-sleeve with a debonair yawn, bought a newspaper, and ridden home in the subway, and engaged in reading about the latest scandal in Hollywood.

Nevertheless, he was startled when this towering visitor, encased in polished steel armor, came into his office, clanking like a steam-shovel. The mysterious caller was completely shielded, from helmet to sollerets, flexible steel shoes, in gleaming metal. Even the gauntlets on his wrists were made of finely-woven chain-mail, and when he raised the trap-door in his helmet, with a bang, his face remained hidden behind a silvery-colored gauze screen. In his right hand, he carried a bulging brown leather brief-case.

Espying this weird-looking monster, Samuel Jones' short-skirted young secretary let out a squeak, and so stiffened in her chair with fright, that she looked like a pretty silk-stockinged artist's model posing in a tightly-wrapped red silk pillow-cover.

"How do ya do, sir?"
Samuel Jones greeted the gleaming apparition, in an urbane and New York-like manner, at the same time pressing a button that rang an alarm in three private-detective agencies, and then cautiously pulling open a desk-drawer that conveniently housed a big, worn-looking 5-caliber six-shooter with a long, blued-steel barrel. It was a gun that he had used for sprinkling lead on ornery trouble-hunters, when he had been building a string of wireless-telegraph stations in Alaska.

"You are Mr. Jones?" inquired the armored mystery, in a voice that seemed to carry something of the hollow roll of a bass drum.

"That's me," replied the occupant of the sheet-metal pigeonhole. "Mr. S. P. Jones to my barber, Sam Jones

to my bootlegger, an' that skunk of a Jones to th' crooks that I publish show-up stories about in th' *Maserka Magazine*."

"It is in reference to this *Maserka Magazine* that I have called," announced the visitor, in a voice that sounded cryptic.

"Oh, yes, won'tcha sit down?" said Samuel Jones, pulling his desk drawer open about a foot, and wondering if lead-nosed bullets could get through this phantom's shining steel breast-plate.

About this time, the door of the office bulged open, revealing a corridor jammed with spectators. As Samuel Jones afterwards remarked, when New Yorkers act that way, it may be said to be the cow's fingernails.

AS he warily got up and shut the door, his visitor sat down in a chair, with a bump like a colliding box-car full of plowshares, and chipped off a lot of varnish with his forged steel tail-piece.

"Sir, I have read that in connection with this *Maserka Magazine*, a late billionaire bath-tub maker, has left you a bequest of \$25,000 a year, to be expended, at your discretion, in exposing all sorts of pseudo-scientific frauds, especially those within the realms of chemistry and electricity; for instance, spurious spirit-photographs, electronic-reaction quackeries, and fifteen-cent radio vacuum-tubes."

"That's th' correct dope," replied Samuel Jones, coldly. He closed his desk-drawer and pushed the "all's-well" signal to the three detective agencies; while

his semi-skirted private secretary came to life and began clicking her typewriter again. As Samuel Jones afterwards expressed it, both he and his stenographer could already see the nigger in the steel-pile. The *Maserka Magazine* got about fifty-seven varieties of "touches" a day, each

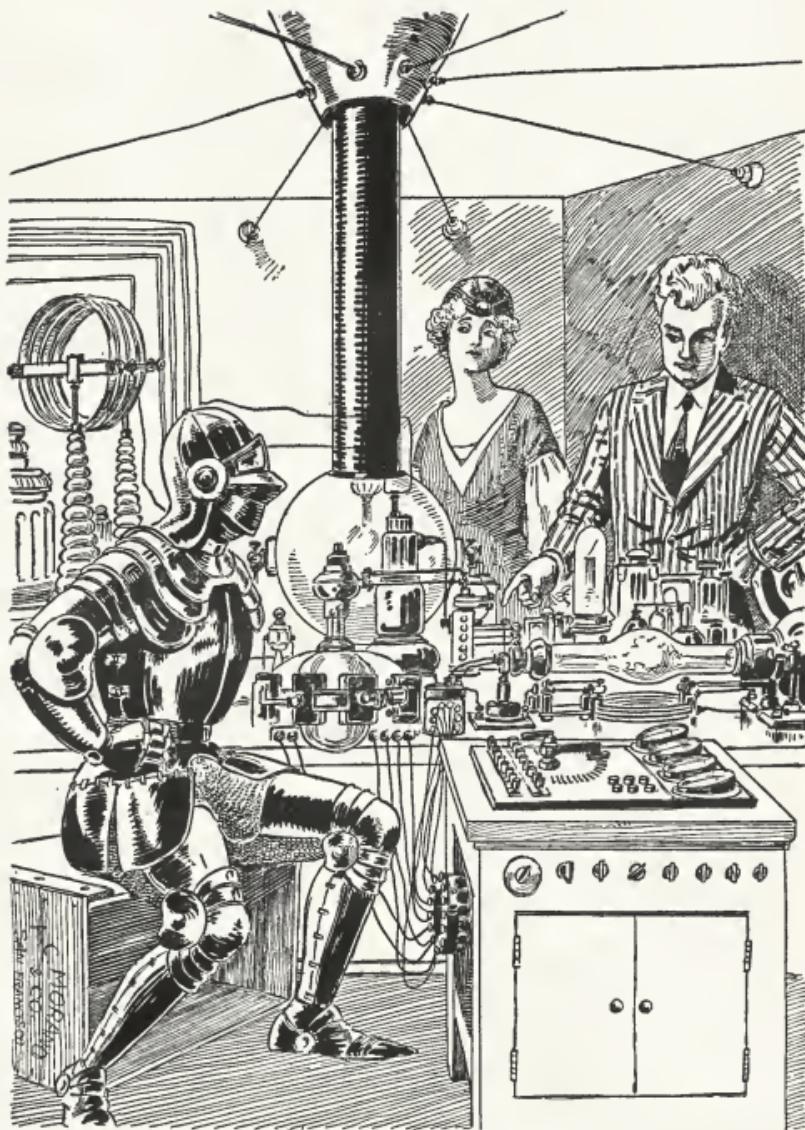
one aiming at that \$25,000.

"I," said the armored mystery, "have come to bring to your attention a thing of vastly greater moment than exposés of electromedical sharks and gold-brick kings. Sir, your life is, at this instant, in deadly peril!"

"Huh!" ejaculated Samuel Jones; and he hastily jerked open his desk-drawer arsenal again, about two feet.

"Yes! And not only your life, but the life of every real American in this country. This nation, sir, faces at this instant a secret, a sinister, a terrible peril. We

HERE is a capital science-fiction story that would have done O. Henry honor. It is one of these rare surprise stories that comes along once in a great while. For good science, excellent fiction, suspense and adventure, it ranges high in the list of science-fiction stories.
We know you will enjoy it!



While the armored mystery looked on, the investigator of scientific frauds got up and walked over to look at the fantastic apparatus on the laboratory table. Curiously he fingered one of the electrical controls on the switchboard beside the instruments.

are about to be irrigated with torrents of human blood! Mr. Jones, we are in the hands of the yellow powers of Asia!"

"Oh, it's th' Asiatics, eh," observed Samuel Jones, slumping back in his chair, with a yawn. "What's th' matter with them scrappin' Chinks over there, now?"

"This is not a jest!" returned the armored mystery, in his powerful voice, which reminded his hearer of a military band playing an impressive march. "The yellow powers of Asia, sir, have developed a deadly radio ray, with which any human being living anywhere on the earth can be instantly hypnotized. There is, at this moment, a wall-eyed Tartar sitting at a board of instruments in Mongolia, who holds the destiny of the earth under his little finger."

"Bah, that's a lot of bunk!" declared Samuel Jones, austerely.

"Sir, listen!" exclaimed the steel-encased visitor, in a voice like a beaten drum. "I have devoted my life to the study of electrons and their phenomena. In co-partnership with an aged, but keen, German scientist, Dr. Von der Vogel, I have a secret laboratory over in the New Jersey hills, above the Hudson. Here, in the course of researches, I have discovered that the human mind radiates continuously a series of electronic impulses, or high-frequency waves. These waves not only can be detected and intensified, with suitable instruments, but they can actually be re-projected with such tremendous and exactly directed power, that a trained operator can force his own mind upon any person at any distance, and instantly control him. The operator of the hypnotic ray, Mr. Jones, can virtually enter one's body, and cause terrible things to happen. He can even put his victim to death!"

There was a silence.

Samuel Jones, case-hardened digger-up of scientific frauds for exposure in the mighty *Maserka Magazine*, sat staring, blankly, at his shining visitor.

"The moment I made this ghastly discovery," continued the armored mystery, in his great, rolling voice, "my mental activity must have been registered by the pick-up instruments of the yellow powers; for they at once resolved upon destroying me, by this very method of radio-hypnosis. I immediately grew ill and sank unconscious.

"Thanks, however, to the presence of mind of my colleague, Dr. Von der Vogel, I escaped death. He, understanding that I was being assassinated with radio rays, which are screened by metals, caught me up and threw me into the iron bath-tub of our residence, above our laboratory; then he ripped a sheet of corrugated iron off the laboratory roof and covered me over with it; thereby shutting off the deadly and invisible electrical beams focussed upon me.

"My rescuer was then himself attacked by the radio-assassins; and we existed thereafter only under great pain and peril, until we succeeded in procuring suits of heavy polished steel armor, which we are compelled to wear everywhere, to shield ourselves from the powerful beams, that are continuously focussed upon us. We have found it impossible to screen ourselves from the tremendous force of the Mongolians' ray with any thin-

ner metal than this; and we never remove our armor, except when we are within the shelter of our laboratory and our sleeping-room, which are both shielded with heavy metal plates.

"Even through this armor, sir, the ray sometimes affects me to the extent that I grow dizzy, see double, and suffer various hallucinations, such as seeing pink baboons, gaunt triple-headed wolves, and giant black spiders as large as coal-scuttles, studded with eyeballs of glowing fire. Doctor Von der Vogel is similarly attacked, often hearing at night diabolical music issuing from about the banks of the Hudson, such as is produced by cymbals, tom-toms, and saxophones, together with a sound like the screaming of tigers calling their mates in the jungle."

"Ahum! Them Mongolian broadcasters are th' bunk, ain't they?" said Samuel Jones, soothingly. He had cautiously gotten hold of his red-covered classified telephone-book, and was thumbing the letter "B." As he explained afterward, he was looking for the telephone number of a bug-house.

"DURING the last two years," the armored mystery went on, "we have been attacked in every conceivable manner. For instance, drivers of huge trucks try to run us down, whenever we cross a street. Doctor Von der Vogel was chased last month by a ten-ton truck that smashed three plate-glass windows, before it was brought to a stop. The driver subsequently alleged that he thought he had gone crazy, having just had a drink of what he called etherized benzine. He at once lost control of his truck when he saw Doctor Von der Vogel walking ahead of him, in his shining armor. All this, of course, was the work of the Tartars.

"In spite of the machinations of the yellow powers, we have persevered in our researches into their secret ray. It is obvious that the only way to combat them is to duplicate their radio mind-controlling instruments, and then engage them in a war of extermination, with their own diabolical apparatus. Many people, realizing this, have financially aided us in our researches. Yet these people have been, one by one, either alienated from us, or assassinated in cold blood, by the Asiatics.

"At this moment, we are on the verge of a complete discovery of the secrets of the Mongolians' radio-hypnotic ray; but our hands are tied for lack of supplies. The work requires very costly materials, particularly radium. We use this element in a powerful vacuum-tube, which the yellow arch-scientists term, literally, the super-white-death-ray generator. We, too, have generated the ray, but we have not been able to direct it. In order, sir, to interest you in what we have so far accomplished, I have brought with me a number of blue-prints and technical notes."

With this, the shining visitor pulled from his briefcase a mass of papers. Some of them were covered with closely-spaced and completely illegible handwriting, which had been done in brilliant purple ink; while others were profusely strewn with drawings of fantastic-looking apparatus lettered with outlandish names, such as "helium-vaporizer," "spectrum-filler," "radium-nozzles," "electronic-compressor," and "proton-gun."

The seeker of scientific frauds for the *Mazerka Magazine* spent almost an hour inspecting these papers and listening to his visitor's explanations of them; but the longer he looked and listened, the more he felt as if he belonged in the same boat with a slab-footed Papuan Islander trying to find out how to boil fish in an electric washing-machine. In other words, as Samuel Jones later put it, he got as balled up as a Greek immigrant in the subway.

"It's too deep for me—on paper, anyway," he mumbled, apologetically, to his caller. "How about it, if I visit your layout?"

"We should be glad to have you visit our laboratory," replied the armored mystery. "It will be dangerous, however, as you will at once fall under the sinister surveillance of the Tartars. Sir, do you feel courageous enough to face the peril of radio-assassination?"

AHUM! Everything has been tried on me, but *that*," grimly asserted the *Mazerka Magazine's* scientific-fraud excavator. "Whereabouts is your hangout?"

"Our laboratory," replied the discoverer of the Mongolians' ray, "is difficult of access, as it is necessarily far from electric power and even telephone lines. But there is a young woman, a Miss Audrey Valois, at an address in Newark, who will be glad to bring you out, in her car.

"Some time ago, sir, I went to Washington, wearing my polished steel armor, to acquaint the Attorney-General with the terrible peril menacing this country, in the white death-ray of the Tartars. I asked for a force of secret-service agents to guard our laboratory, until we could complete our combative apparatus, which we should then turn over to the government, as a priceless gift. But a courteous assistant of the attorney-general, after hearing fully of the matter from my lips, said that there was not a man in the entire secret-service department who could be trusted in such a stupendous crisis, and that it would, therefore, be impossible for the Attorney-General to aid me.

"As I was returning sadly from Washington, this striking person, Audrey Valois, whose attention had been attracted by my armor, engaged herself in conversation with me. I quickly found that she, having a keen intellect, and being an interested female student of radioactive phenomena, was also being harassed by the Tartars. Miss Valois, who is a clever young woman, has since rendered us many services. I shall give you a note of introduction to her; and she, I am sure, will be glad to bring you to our laboratory at any time of the day or night."

The next afternoon, when the scientific investigator for the *Mazerka Magazine* was on his way to Newark, standing in an uncomfortable jam of subway-passengers, he felt somebody roughly shove something into his coat-pocket. Snatching at it, instantly, he found that it was a tightly-folded newspaper.

Glaring around in the crowded train, Samuel Jones saw nobody who looked particularly suspicious to him, although he did notice a muscular-bodied person in a black derby hat, who had his face stuck into a pink race-

horse paper, in which he seemed thoroughly engrossed.

Unfolding the newspaper that had been mysteriously thrust into his pocket, he found smeared over the newsprint, in big crimson-inked letters, these threatening words: "BEWARE—DEATH!"

Under these words, a big crudely-made red arrow pointed to this small news item down in the lower left-hand corner of the page—

"ECCENTRIC SCIENTIST MEETS DEATH

Newark, March 26.—Dr. P. V. Von der Vogel, a peculiar old German scientist living near Park Ridge, where he has a laboratory said to be filled with strange radium and radio apparatus, and who, for some mystical reason, has lived day and night in a suit of massive steel armor, of the kind worn in the Middle Ages, was found here early this morning lying in a lonely street, his armor completely flattened and his body terribly crushed. He appears to have been run down by a heavy motor truck and instantly killed."

"Ahum!" muttered Samuel Jones, looking rather chilled; and he felt of the old heavy six-shooter he wore buried on his hip. Again glaring about him, he observed that the muscular-bodied man in the black derby, whose face had been stuck in a pink race-horse paper, had disappeared.

AUDREY VALOIS of Newark, to the amazement of Samuel Jones, was a glorious blonde with a silk-clad ankle that would have been a credit to the leading movie star of a suffering husband's super-drama.

"I suppose I don't look much like a woman student of electronic phenomena," she remarked, smiling at the scientific-fraud excavator in a way that made him feel like a shingle nail close to an electro-magnet.

"Hell, no!" ejaculated Samuel Jones, before he knew what he was saying. Then, after an embarrassed pause, he blurted out—"I thought you'd have hornshell glasses an' big feet!"

Audrey Valois laughed, in a gracious and amused manner.

"Oh, I've put those away," she responded, lightly. "And as yet I haven't been compelled, like Count Vrennicky, to wear any forged-steel garments."

Then, swiftly, she grew serious.

"I see you have a paper," she observed, in a grave voice. "Have you read about the murder of Doctor Von der Vogel?"

Samuel Jones unfolded the newspaper that had been stuck in his pocket, and showed the girl the warning that had been scrawled on it.

"An agent of the yellow papers gave it to you—you are already marked!" exclaimed Audrey Valois, in a low voice. She gazed at Samuel Jones' garish green silk necktie in a troubled and solicitous manner. "Count Vrennicky has telephoned me about you; and I have my car ready to take you out to his laboratory. But I fear the danger is going to be too great—"

"Listen, that danger stuff is mostly bunk to me," interrupted Samuel Jones, bluntly. "There's a flock of bad eggs in this neck of the woods who've sworn they're goin' to boil me in bootleg whiskey, on account of th' things I found out about 'em for th' *Mazerka Magazine*; so I guess a couple more disgruntled gents

way over in Tibet won't make very much difference."

Audrey Valois put the fraud-investigator into a snappy sapphire-blue roadster; and, as Samuel Jones subsequently stated it, they headed for the hang-out of the armored mystery.

Getting away from Newark, they spun, for about thirty miles, along a boulevard leading up through the New Jersey hills. At length they turned off into a bad dirt road that rambled among orchards of leafless, brown-limbed apple trees, and then wound upward about the high, rocky face of a dark cliff overlooking the Hudson.

During this ride, it was apparent to Samuel Jones that a big motor truck with a cluster of hard-looking customers riding on it, was following the roadster. This didn't look good to him at all, especially after what he had read about the squashing of Doctor Von der Vogel, presumably by some similar gasoline-driven juggernaut. However, he could feel the comfortable hardness of the old six-shooter on his hip, and he said nothing.

At the upper end of the rough, steep road, the two occupants of the roadster arrived at a high and gloomy looking old moss-grown stone mansion, which stood among a few tall beech trees, directly above the Hudson River.

It was a cold, murky day. There was an increasing chill in the air.

The discoverer of the Mongolians' ray met his two callers in the dark, grotto-like entrance of the old mansion. He was still clad in his gleaming armor.

"Miss Valois, I cannot see very well through the anti-ray screen before my face," he said to the girl. "I was forced to double it this morning, because of a radio-hypnotic attack of extreme intensity, that was directed upon me while I was attending the coroner's inquest into the death of Doctor Von der Vogel. Therefore, will you please inform me whether Mr. Jones is displaying any of the colors?"

"Displayin' the colors!" exclaimed Samuel Jones, looking mystified.

"He is," replied Audrey Valois, in a low voice. "He is wearing a green silk necktie with dark red figures on it."

"The mark of surveillance," said the armored mystery. "Are there any others?"

"Yes. He has on an olive-green hat."

"Special instructions issued concerning him—that's bad!" muttered the powerful voice in the armor.

"I just put that hat on to-day," said Samuel Jones, apologetically. "I generally wear a gray one—"

"The control-interference is very active!" exclaimed the discoverer of the Mongolians' ray.

"What color are your socks?" inquired Audrey Valois. Before Samuel Jones could reply, she had taken hold of one of his trouser legs and lifted it up.

"Green!" she exclaimed, in a tone of horror, "—and a red silk arrow!"

"Why, that's a threat of death!" announced the deep, drum-like voice in the gleaming armor.

"Ahum! I don't see how I come to get so much green on me," remarked Samuel Jones, innocently.

IN silence, the armored mystery led his visitors into the old mansion. They followed him through a long, gloomy corridor; then down into the cellar, and into a small, cavern-like room with no windows and only one door. Its floor, walls and ceiling were sheeted with galvanized steel; and it contained a big, rough wooden table which was completely filled with the strangest-looking apparatus in the world.

There were induction coils on pyrex bases, galvanometers, batteries of photo-electric cells and arc-lamps; and a long black tube, like a telescope, or a gun, running up through the roof. Below the black tube was mounted a huge, weird-looking, shining glass vacuum-globe, nearly two feet in diameter. Inside of it were a row of small glittering mirrors; and at the bottom was a big cone that scintillated as if it were a mass of pure radium. It illuminated the laboratory with a silvery-white glow, like soft moonlight. There was no other source of light in the room.

From this apparatus a bundle of silk-covered wires ran to a small switchboard set up beside the table, which was studded with meters and electrical controls.

The discoverer of the Mongolians' ray motioned his visitors to sit down on a rude bench opposite his instruments.

"Before I explain to you the machines you see before you, Mr. Jones," came the deep voice from within the suit of armor, "I shall first tell you something of the bizarre operating methods of the Tartars, and reveal to you the significance of the examination I made of you a moment ago.

"Sir, one of the most fantastic features of the Mongolians' surveillance system is their use of identifying colors, which are imposed on businesses, on families, and on private persons. Yellow and orange stand for safety; while green, blue and purple indicate the enemy, the goats, the outsiders, and, together with black, are the marks of certain death."

"Thus, if a subject is found amenable to radio-hypnotic control, he is caused to develop a mania for orange, heliotrope, and canary-bird-yellow ties and socks. He is then dismissed as of no further importance, and is thereafter referred to as 'solid ivory.'

"Brilliant yellows, magenta, and, sometimes, flaming scarlets, indicate actual members of the death-ray organization of the Tartars, and also the numerous white sympathizers of the yellow powers. Such sympathizers, however, generally try to avoid any particular markings, keeping out of the public eye, and eating in upstairs restaurants and chop-suey establishments. Persons in the habit of eating in those places are therefore to be regarded with suspicion."

"Combinations of red and green indicate that the victim is dangerous. Garish greens with red figures, particularly arrows, are threats of death by radio-hypnotic control."

"A victim doomed to death is nearly always taken off by causing him to contract some ordinary illness, and then imposing upon him doctors who prescribe poisons. Many doctors appear to be under the influence of the Tartars at all times. The nerves of the victim are also broken down by causing various per-

sons in neighboring apartments to practise unceasingly on flutes, piccolos, harps and saxophones with cowbell and fire-engine attachments.

"The Mongolians are also attacking our nation, as a body, in subtle ways. They are destroying our morals, by controlling the publishers of women's fashion magazines and trying to induce the female sex entirely to stop wearing clothes. How well they are succeeding in this you can see by merely glancing at your wife—or anybody else's, if you have one."

"Ahum! Th' present styles suit me pretty good," interrupted Samuel Jones, contentiously. "And, anyway, if th' pigtails is doin' all this, what is th' purpose of all their radio-ray cannonad'in'? What are they plannin' to do when th' girls cast off their last garter, an' the country is all shot to pieces?"

"Sir, think!" exclaimed the armored mystery, in his deep, powerful voice, like the sound of a beaten drum. "The day the Asiatics gain control will be the day when the sun will set upon the white race. Heaven preserve us from that cataclysm!"

"That sounds like a lot of boloney," observed Samuel Jones, thoughtfully.

ARATHER strained silence ensued.

The investigator of scientific frauds got up and walked over to look at the fantastic apparatus on the laboratory table. Curiously, he fingered one of the electrical controls on the switchboard beside the instruments.

"Whrrrooo-o-o-o!" shrieked out some sort of black iron machine, right at Samuel Jones' feet, almost startling him out of his shirt. Instantly, the needles of all the meters on the switchboard in front of him flew clear over to the ends of their scales. Purple tongues of fire crashed over switches and knobs. The huge glass vacuum-bulb burst into a blinding, blood-red glow, which changed successively to orange, yellow, green, blue, and then to a ghastly, dazzling violet. Copper wires burst into puffs of fire and smoke. Then something went off close behind Samuel Jones' head, with a terrific bang; the laboratory was filled with a hot, blinding sheet of flame—and instantly there was silence and utter darkness.

"Oh!" groaned the voice from within the now invisible suit of steel armor.

The discoverer of the Mongolians' ray clanking pushed open the laboratory door; and his speechless visitors staggered out into the basement. In the murky light that was filtering in through some small cellar windows up in the gray stone wall, Samuel Jones saw that he was all scorched and singed.

"By heaven, sir!" exclaimed the armored mystery, in a despairing voice. "You have exploded the proton-gun, and destroyed a ten-thousand-dollar charge of radium that I had mounted in the vacuum-globe. Why did you tamper with that switchboard? Probably I can repair the instruments; but I have no more radium. I hope you will replace it, sir."

"Ahum!" said the blackened investigator of scientific frauds, spitting out what he afterwards asserted was a couple of shovelfuls of ashy-tasting soot. "Harrumph!"

"Did you mention the sum of ten thousand dollars?"

"You could ill afford personally to make good such costly damage, I suppose," said the deep voice in the shining armor, sadly. "But could you arrange a donation from the scientific investigation fund in your charge, to enable me to replace the radium you have destroyed?"

"Well—I wouldn't feel very good about it," replied Samuel Jones, in a troubled and shaky manner.

The armored mystery turned away, and silently bowed his gleaming helmet.

"Please, Mr. Jones, help him!" cried Audrey Valois, quickly, catching at his hand. "If your conscience troubles you about drawing on your scientific fund, you could replace it in small amounts, or all at once, in some future time, when you could afford it."

"Do not beg him, madam!" said the discoverer of the Mongolians' ray, in his deep, sad voice. "If ten thousand dollars means more to him than this priceless apparatus which will be ruined if the vacuum-globe is not recharged with radium within twenty-four hours—if these instruments upon which the very existence of the white race hangs by a thread—"

"Aw, dry up," exclaimed Samuel Jones, in a surly tone. "I guess I blew up your old junk-pile. I'll give you a check for ten thousand dollars—right now."

There was a tense silence.

The fraud-excavator for the *Maserka Magazine* pulled out a fountain pen and a check book. Stepping over to a surprisingly convenient table made of a couple of rough boards, he wrote out the check. Then he put it into the chain-mailled hand of the armored mystery, who still stood, silently, with his helmet bowed.

Close behind Samuel Jones there sounded a shrill police whistle. Whirling around, he saw Audrey Valois taking the whistle from her lips. There was a thundering of feet overhead; and down came tumbling the crew of hard-looking customers, as Samuel Jones subsequently described them, whom he had seen following the roadster in a big motor truck.

THEY started to close in on the discoverer of the Mongolians' ray; but Audrey Valois checked them, raising her hand, and addressed the motionless mystery in the shining armor:

"Arman Stressmann, alias Count Vrennisky, alias Doctor Von der Vogel, alias Radium Harry, you are under arrest, in the name of the United States of America!" She put forward her right foot; and, murky as the light was, Samuel Jones had no trouble at all in seeing under her silk stocking, quite a ways up from her ankle, a U. S. Secret Service badge.

The discoverer of the Mongolians' ray lifted his right arm and hurled a large glass tube in his chain-mailled fist down on the stone floor. There followed another deafening bang, and the place was instantly full of a purplish-yellow gas, which struck Samuel Jones' throat like a bucket of red-hot nails. The last thing he saw, at that time, was a black automatic pistol spitting a red tongue of fire, and the armored mystery toppling over sideways on the floor, like a falling chimney, with

(Continued on page 271)

FINGERS of the MIST

By Peter Brough



CROSS a grey sky, only a shade lighter in tint than the sea beneath it, flew a plane, its motors humming in monotonous rhythm. It was the hour after sunset, and the streaks of daylight which were fading rapidly from the sky, burnished the westerly side of the plane, leaving the other side in darkness. The plane flew low, because of its heavy load of fuel. In its path there lay upon the surface of the water a silvery patch, from which rose faint streamers of mist, that curled and writhed in the still air. When the plane reached the pool of mist, it seemed to falter in its course. Losing flying speed, one wing turned downward, and the plane slipped, like a falling leaf, into the sea. Presently the weaving fingers of the mist closed upon the place where the plane had fallen.

When John Trevelyan received the summons from his friend, Admiral Stokes, he hastened to Washington, with the feeling that something of importance must have occurred to account for the urgency of the call. Stokes was now in charge of naval aircraft. Trevelyan had known him when Stokes was only a lieutenant-commander, ten years before, and had been Trevelyan's commanding officer. The admiral greeted him cordially, but seemed at a loss how to begin.

"Look here, Trevelyan," he burst out at last, "there's something queer going on. You've read of the disappearance of Lindstrom; no word received from him since he passed over St. Johns. That's about the sixth plane lost in a few months, and all flown by good pilots. The weather hasn't been so bad, either. I can't figure it out. I must confess I'm afraid of being laughed at, so I haven't mentioned it to a soul but you, but I can't help feeling that it isn't all a coincidence. I believe there's some agency responsible for those disasters.

He looked defiantly at Trevelyan, as if daring him to ridicule the notion, but Trevelyan returned his gaze seriously.

"Do you know, I'm inclined to agree with you. I think many people are, but because they can't offer a rational explanation they won't talk about it. They're afraid of being considered superstitious. But what did you have in mind—anything definite?"

"No, I can't say I did. I have no idea whether these tragedies are caused by some human agency or

by an unknown natural cause. But it occurred to me that you were the one man who might be able to help me. I know your interest in mysteries, and I know that you have independent means to carry on your investigations. I can't issue orders through official channels on anything as vague as this idea of mine, but I might be able to give you the necessary assistance to follow up an investigation, if you would care to undertake it. Can you suggest a plan of campaign?"

"I believe," replied Trevelyan, "that the starting point should be Newfoundland. Several of the missing planes were last seen at that place. Perhaps the mysterious cause of these disappearances exists near there. At any rate, it won't do any harm to try. I might pick up some clues. Can you let me have a plane if I need one?"

"Certainly. I'll give you a plane, and a pilot to act unofficially under your orders. He can go ostensibly to search for wreckage of the lost plane, in case the news leaks out; but we'll keep it quiet if possible. When do you want to start?"

"As soon as possible. We'll save time by flying there."

"I'll give you a call when everything is arranged. Meanwhile, where can I reach you?"

"Better phone me in New York. I'll have to go back to make some preparations."

SYNTHETIC life is no novelty in the laboratory. Scientists claim to have come pretty close to the secret of life, and while the living beings which some have claimed to have produced synthetically are microscopic, yet, under certain conditions and combinations, it seems to be possible today, to accomplish this.

The late Dr. Loeb was one of the pioneers, and accomplished a good deal in this line of endeavor. The accompanying story is sure to hold you spellbound. It is an unusual science-fiction tale, in which adventure and excitement vie with one another.

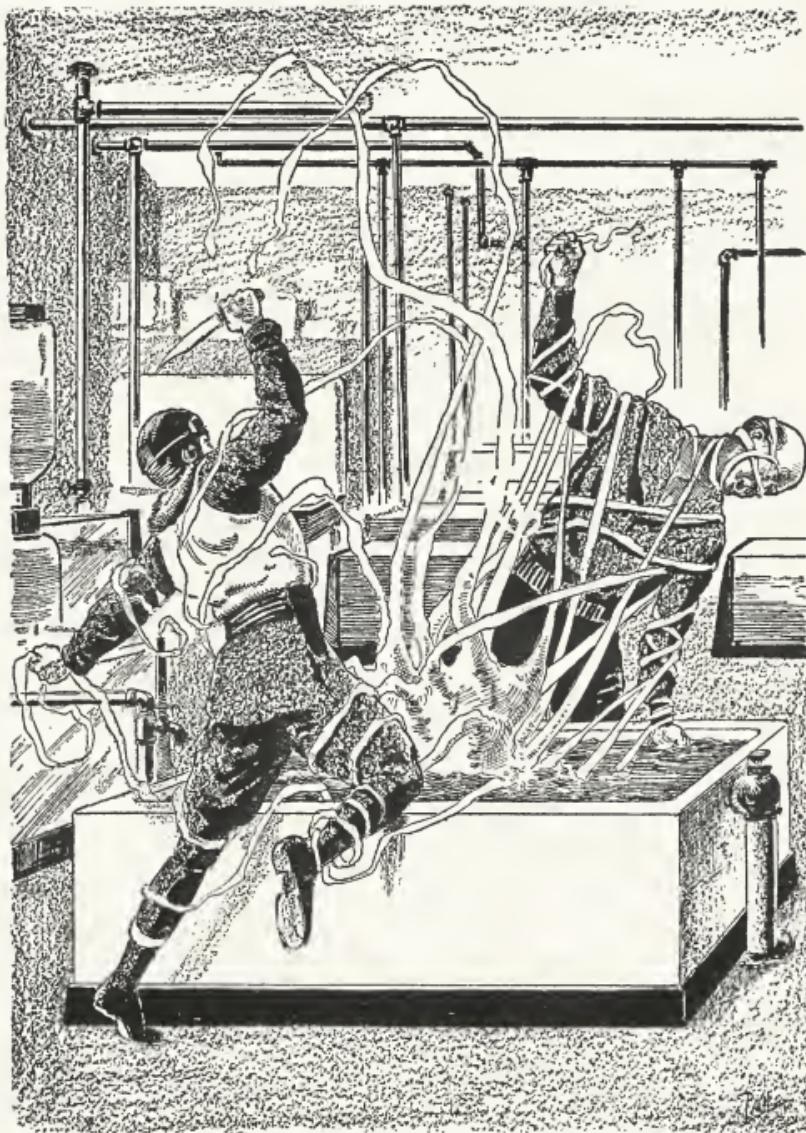
THE arrangements concluded, Trevelyan returned to New York to prepare for the trip and await the admiral's message.

Three days later it came, while Trevelyan was at breakfast. He had been reading in the morning paper of the public clamor for legislation to prevent transatlantic flying, as a result of the heavy toll of deaths. The total disappearance of Lindstrom had been the final touch that had stirred the country to take measures to prevent further tragedies.

The admiral's voice sounded as though he were pleased with himself.

"I'm sending you Lieutenant Wainwright, a good pilot, in a single-motored seaplane. We've worked day and night to get her equipped for long flights. Extra fuel tanks installed."

Trevelyan reflected how Lieutenant Wainwright had probably worked day and night in response to the ad-



In an instant, Treveyan had seized the knife and was at the other man's side. The waving tentacles seemed to sense the approach of an enemy, and coiled more swiftly about the struggling scientist . . . he felt himself irresistibly drawn toward the wooden side.

miral's order to have the plane ready in three days; but he only remarked:

"Thanks. Can he pick me up at Manhasset Bay?"

"Certainly," replied Admiral Stokes. "He has been told unofficially to take orders from you. Within reason, of course. Any exceptional plans to be referred to me for approval. Good luck to you, Trevlyan, and let me know if you find out anything."

AN early train deposited Trevlyan at Port Washington, the following morning, where he was met by Wainwright. Most of the day was spent in final preparations for the 1,200-mile flight to St. Johns. At five in the afternoon they taxied away from the beach in front of the shipyard, and after a short run across the bay, rose in the air—leaving behind them the anchorages of the yacht clubs, and the estates of Sand's Point.

The sun was just rising when they sighted the east end of Newfoundland, and, crossing the island, descended upon the smooth waters of Conception Bay. Near at hand was a small fishing village. The appearance of the plane, however, caused little excitement. The fishermen seemed interested, but hardly cordial. When the news was spread around that they were there merely to search for the wreckage of the Lindstrom plane, the aloofness of the natives seemed to lessen, and Trevlyan found it possible to get more than monosyllabic answers to his questions.

There was one old fellow, named Picar, who limbered up more than the rest, and volunteered the remark that it was just as well that they weren't going to fly to Paris.

"Why is that?" asked Trevlyan.

"The sea don't like fly across," the old man replied, "the Bon Dieu he geeve the sheep to go on sea. The bird fly, man sail the sheep, not fly. The sea jalous. When man try to be bird, the sea angry, he take the man. He not geeve up. When man drown from sheep, the sea geeve up the man. When man fly—the sea not geeve up the man."

"That's true," replied Trevlyan, "not one of the lost aviators has been found, although the bodies of drowned sailors are often given up by the sea."

"Nobody know all the secrets of the sea," said the native, "not even the old feesherman who levee by the sea all their lives. Feeshermen are getting fear to go to sea now, till man stop flying. New things in sea—or old things long time asleep, now wake."

The old man crossed himself, and repeated, "Nobody know all the secrets of the sea, not even savant who works alone."

"Who is the savant who works alone?" asked Trevlyan.

"He levees there." The old man pointed to the top of the dune, and indicated a house like the rest of the cottages, but larger and comprising an obviously recent extension on one side, made of unpainted boards.

"Who is he?" repeated Trevlyan.

"Hees name Alexandre," said Picar. "He savant—seeks the knowledge of the sea."

Trevlyan decided to make the acquaintance of the

mysterious M. Alexandre. He climbed the steep yielding slope of the dune, and paused at the top to catch his breath.

Standing there, he surveyed the scene below him: the white beach, the crested breakers that ceaselessly rolled the pebbles with a swishing sound, and the bluish-green of the ocean, interrupted further out by the white line of the bar. It was as fresh and clear a day as he had ever seen, and his eye searched the horizon where a sail or a smudge of smoke marked the passage of a ship. A few miles out a small sailboat ran before the wind; her sheet far out, and her canvas drawing well. Behind it trailed a misty patch, like the cloud of dust thrown up by a racing car, but thinner, less palpable than dust, and of a silvery color.

The strange mist that appeared to be sucked into the wake of the boat grew ever closer to it, until it seemed to reach the stern. Quite suddenly the little craft changed its course, the bow turning to leeward, and the boom swinging across the stern as she jibed. The mast dropped over the side, and the white sail trailed across the gunwale. The silvery mist seemed to envelop the boat. It was hardly discernible.

Trevlyan rushed shouting down the side of the dune toward the plane, where Wainwright was working.

"My God," he yelled, "there's a boat in trouble out there! She jibed, and it took the stick out of her." He reached the plane breathless, and gasped, "Get her going. There's something queer happened out there."

Wainwright jumped into the cockpit. "Throw over the prop for me," he said quietly.

Trevlyan seized the propeller and turned it over twice.

"Contact." The engine roared, and Trevlyan slipped into the seat beside Wainwright.

A short run across the bay and they were in the air, droning over the heads of a crowd gathered about some boats. Evidently other eyes than Trevlyan's had witnessed the accident. At a height of fifty feet they crossed the point and the line of breakers. The small boat lay quietly, without sign of life on board, its sail still trailing over the side, the broken mast held by the tangle of rigging.

In five minutes they were circling over her. The mysterious vapor had completely vanished, but the surrounding water was of a lighter green, as if a shoal lay beneath. Trevlyan made circles with his finger, and pointed downward. Then he commenced to remove his coat. Meanwhile Wainwright nosed over the plane, and throttled down the engine. Over the reduced noise of the motor, Trevlyan was able to shout in his companion's ear:

"Come down near her. I'm going to swim over."

Wainwright nodded, and presently the series of thumps upon the bottom of the hull announced that they were skimming the crests of the waves. They settled into the water less than a hundred feet from the disabled craft, and Trevlyan, his coat and shoes removed, dived over the side and swam toward it.

Wainwright, watching him intently, saw him reach the floating wreckage and haul himself on board by means of the trailing rigging. Then he vanished under

the sail, and appeared to be searching for something. Presently he emerged, and stood on deck forward, looking intently into the water. The lighter shade of the water had disappeared, Wainwright noticed. Whatever the cause, it had gone; or the plane and the boat had drifted away from it. Trevelyan walked about for a while, and then, shaking his head as if in disappointment, dived again. A few moments later he was huddling into his coat. He displayed a water-soaked cap to Wainwright. Adhering to its surface were several thin filaments, rather slimy to the touch.

"There's no sign of the man except this cap," remarked Trevelyan. "Let's get back. Those boats will take an hour to get here, and I don't want to freeze to death waiting for them."

The throttle opened, all conversation was at an end until they had landed once more in the cove, and taxied to the sand pit.

An eager crowd of fishermen encircled the aviators as they climbed out into the shallow water, and excited questions were hurled at them by the companions of the missing fisherman. Trevelyan held up his hands for silence. The drowned man's cap dripped from his fingers.

A hush fell upon the crowd. Some of them uncovered, and crossed themselves.

"This is all I found," said Trevelyan. "There was no sign of the man. I searched the boat, and the water around it, but there was no sign of the body."

Old Picar, standing in the front rank of the crowd, nodded his head slowly.

"It take him joost like it take the odders," he said. It was evident that the result of Trevelyan's search was not a surprise to him.

"What took him?" demanded Trevelyan.

Picar shrugged his shoulders, waved his hand vaguely in the direction of the sea, but made no reply.

Trevelyan turned to Wainwright and in a low tone said, "I'm going up to see this man Alexandre or Alexander, or whatever his name is—the scientist. How are we fixed for a long flight?"

"The extra gas is in cans in the hut. In an hour or so I can have the tanks filled, and we'll be ready for fourteen hours in the air. The motor's working all right."

"Good! Get the gas on board. I'm going to change my wet clothes and see Alexander. If I find out anything, we may need to start right off."

While Trevelyan was changing his clothes, he reflected over the mysterious tragedy he had witnessed from the dune. What had caused the lonely fisherman to lose control of his boat? What was the strange mist that had apparently pursued the boat and overtaken it? And where had the man's cap acquired those slimy threads? It was probable that the man's fate was linked in some way to that of the missing aviators. Alexander might, perhaps, furnish the clue.

When he had finished dressing, Trevelyan directed his steps toward the building which Picar had pointed out as the laboratory of the scientist.

A few yards from the door he paused—and then hastened his pace through the yielding sand. From the

building issued the sounds of a struggle, mingled with hoarse shouts!

Trevelyan ran to the door and threw it open.

He was in a large room, around the walls of which ran a continuous bench or shelf, loaded with glass tanks, interspersed with jars, bottles, and racks of test tubes. His attention was immediately riveted on the center of the room, which was occupied by what appeared to be a tank of larger size, covered with wood.

Against the side of it stood a tall, thin man, his body wrapped by a pair of long tentacles, that issued from the tank. With his hands he fought off the approach of a dozen others that waved slowly and threateningly in the air, and seemed about to encircle him. The menacing arms were long, but slender for their length. In color, they were of a translucent, silvery whiteness, with faint, iridescent gleams, that varied as the light played upon their shining curves, or penetrated their transparency. At times they almost seemed to vanish, melting into the background like streaks of vapor.

"Grab that knife from the bench, and hack these things off!" shouted the stranger.

In an instant, Trevelyan had seized the knife and was at the other man's side. The waving tentacles seemed to sense the approach of an enemy, and coiled more swiftly about the struggling scientist.

Trevelyan, with swift strokes, cut the two arms that gripped the scientist's body, and was raising his knife to strike a third that was coiling about the man's arm, when something cold and repulsively slimy slid about his neck, and tightened in a strangling grip. In the horror of the moment, he felt the knife pulled from his grasp, while the unknown monster in the tank drew him irresistibly toward the wooden side.

It was only an instant later, though to Trevelyan, straining for life against the throttling embrace of the creature, it seemed an age, that the tension about his throat relaxed abruptly, and he felt himself hurled across the floor.

The tall man bent over him anxiously, and asked, "All right, old man? Sorry I was so rough." He held up the knife. "I had to take that away from you. I got away from the Hydra just as he caught you by the throat. You'll feel better in a moment."

Trevelyan shivered at the recollection of the slimy thing, and put his hand to his throat. It was still covered with the secretion emitted by the animal. He felt a momentary nausea.

"You can wash that stuff off in here. Better have a drink. You came in the nick of time. By the way, my name is Alexander."

"Good God!" exclaimed Trevelyan, "What is that confounded beast that had me by the neck?"

"That," said the scientist, "is the Alexander Hydra." He looked a trifle complacent.

"The name doesn't tell me much, except that you are the discoverer," replied Trevelyan.

"Not the discoverer, precisely. Say rather the inventor."

"Do you mean it's a—er—synthetic animal?" asked Trevelyan.

"In a way, yes." He nodded. "I've found a way

to perpetuate living tissue, with the creation of some rather odd animals. I hardly know what to call the creatures. The Alexander Hydra will never be a popular domestic animal. The greek mythical Hydra was many-headed, and the term has become synonymous for any evil that is hard to extirpate. So the name is appropriate, although my Hydra has no head at all. But you mustn't confuse it with the common Hydra, a fresh-water polyp."

"I won't," Trevelyan promised, "because I never heard of it. But what, in the name of Pygmalion, have you given life to?"

"Well, perhaps I had better start further back in my story. For fifteen years, I have been engaged in cultivating in suitable media, small pieces of living tissue of various sorts. You know other people have done it, too. Dr. Carrel has been cultivating a bit of tissue taken from the heart of an embryo chicken many years ago. I've done the same with tissues from various kinds of animals, but I've concentrated very largely on squid tissue.

"At first I had to use very small pieces, washing them and changing the solution every day. The tissue, as you know, has to absorb its food from the medium in which it is kept, and must discharge the waste products of metabolism back into the solution. Since it is merely a collection of somatic cells, none of which are differentiated for specific functions—"

"Wait a minute," said Trevelyan, "I'm not a biologist. Say it in words of one syllable if you want me to follow you."

"Sorry," replied Alexander, "the tissue is not equipped with organs for digesting food or excreting waste products, and therefore these functions have to be performed for it. However, my experiments, in accelerated evolution were directed toward the possibility of causing this undifferentiated agglomeration of cells to evolve into a self-sustaining animal. (I noticed your warning look, Trevelyan; I'll keep to plain English.) Do you follow me so far?"

"If you mean that you were trying to grow a whole squid out of a little chunk, I do," replied Trevelyan.

"Yes. But not necessarily a normal squid. It was necessary to go through many preliminary steps. I changed the solution very gradually and reduced the frequency of washing until, after hundreds of trials and failures, I succeeded in producing squid tissue which had adapted itself to ordinary sea water, provided the water was filled with plankton. Don't be alarmed! Plankton are the minute, jelly-like life of the sea that form the food of the smaller free-swimming animals. As you know, such tissue grows at an enormous rate. Other experimenters have been obliged to continually reduce the size of the specimen by cutting off part of it from time to time. It was unable to continue its life processes because it became clogged by its own waste products. By producing a self-sustaining tissue, however, I was enabled to grow specimens of considerable size. You just made the acquaintance of one! The growth is truly astonishing, while not as rapid as the multiplication of bacteria, which may divide and double in number every fifteen minutes. As you

can easily calculate, if the division occurred only once an hour, the descendants of a single bacterium would in two days number almost 300,000,000; and in three days, the progeny would weigh about 7,000 tons. Naturally, scarcity of food is the limiting factor in all such rates of growth. My squid tissue, it is true, did not grow so fast, but fast enough to take me by surprise. The specimen that gave us both so warm a reception was only a foot long yesterday.

"Only one more fact to complete this rather dry lecture. While none of these Hydra have grown into normal squids, they have nearly all developed tentacles, which grow from every part of the body. The digestive system remains primitive, food being absorbed through the outer surface in the same manner as with the single-celled animals.

"I call them Hydra, I neglected to say, because they cannot be killed by cutting them in pieces. Each severed part grows as rapidly as before and becomes an entire individual; if indeed they are individuals, for I am uncertain whether they should not be classed as colonies of animals. In many respects they resemble some of the colonies among the protozoa."

Trevelyan did not comment on these remarks, but instead asked another question.

"How long is it since you found out that these Hydra could live in sea water without requiring washing, and special solutions, and all that sort of thing?"

"Only about a month."

"And what have you been doing with the tissue you cut away?"

"I threw it into the drain pipe where all my waste goes. It leads down the dune to the water."

"My dear sir," said Trevelyan, "we've solved it!"

"Solved what?" asked Alexander.

"The fate of the missing fisherman—and, by George, of the missing aviators!"

"What missing aviators?"

"All of them. The dozen or more transatlantic fliers that have been lost in perfectly good weather."

"Well, well, that's too bad. So there have been fatal accidents? But they'll do it some day."

"Do what?"

"Fly the Atlantic."

"Fly the Atlantic! Why, don't you ever read the papers? Didn't you ever hear of Lindbergh, Chamberlain, Byrd, Hinton, and the rest?"

"Sorry, I'm afraid not. I'm seldom away from here except to get supplies and I never read the newspapers. I guess I haven't seen anyone but you and the fishermen for several years. So they've succeeded in flying across! And all these people you've mentioned—have they all disappeared?"

"No, no," replied Trevelyan in desperation, "they've all succeeded. It's the others that are lost. I'm morally certain that all the disappearances can't be attributed to weather conditions or accidents. Some of these planes are the victims of Hydra. I'm convinced of it! Today from the dune I saw a fishing boat overtaken by what looked like a cloud of mist. When we reached the boat, the fisherman was gone."

The scientist's expression changed at Trevelyan's

words, and he leaned forward in some consternation. "You mean," he said, "that the pieces of tissue I've discarded have gone on growing and—Good God, the poor fellows! What a horrible fate!"

"These *Hydra* cannot be killed by cutting in pieces, you said," continued Trevelyan. "How can they be exterminated?"

"Starvation, poison, disease." Alexander shrugged his shoulders. "Those pieces on the floor, put back into the tank, would grow like the parent." He pointed to the fragments of tentacles which still writhed slowly. "Left there, they will dry up and die. An ordinary poison of moderate strength, formaldehyde, carbolic acid, lysol, anything of that sort, will quickly kill them. Look."

He took a bottle from the shelf and emptied the contents on the severed tentacles. For a moment they squirmed faster, then subsided into complete stillness.

"The attack of a sufficiently large number of small fish would probably accomplish the same result. There are parasites that are found in many marine animals, and in squids themselves, which could destroy these creatures."

"I have it!" shouted Trevelyan, jumping to his feet. "Come down with me while I make arrangements with Wainwright."

Two hours later the seaplane set out for New York, while a telegram to Admiral Stokes prepared the way for the destruction of the *Hydra*. Trevelyan, alone, went to St. Johns, where he visited a ship-chandler, and returned with certain iron implements that clanked in the tonneau of the hired car.

THE quiet of the morning was broken by the shattering roar of the motor, as the heavily laden plane taxied across the still waters of the inlet, and, gathering flying speed, rose slowly into the air. The rear cockpit of the plane was filled with metal cylinders that connected with two pipes that led to the sides of the fuselage and pointed downward toward the tail. In the pilot's cockpit were Wainwright and Trevelyan, while the observer's post in the nose was taken by the scientist. Under the lower wings, in the space allotted to bombs, hung a row of cylindrical objects made of sheet metal and painted in bright red and white squares.

The sea was calm with hardly a breath of air stirring. When they crossed the sand-bar, they could see the surf lazily rolling in, a line of white drawn across the green. The three occupants of the plane eagerly scanned the water as the beach fell away behind them. Nothing disturbed the blue expanse but an occasional sail and the smudges of steamers near the horizon.

Toward each trail of smoke Trevelyan and the scientist directed their glasses, only to signal each other by a shake of the head that their quarry was not yet in sight. For four hours they flew, following the circumference of a huge circle, calculated to bring them back to their starting point before their fuel was exhausted.

Trevelyan, surveying the surface of the water with the closest attention, suddenly waved excitedly to the scientist. Two pairs of binoculars fixed themselves

on the thin line where sea and sky joined. Scarcely visible in the vibrating lenses appeared a faint silvery smudge, like a cloud or a patch of mist. Around swung the nose of the plane as Wainwright followed the direction of the glasses, and with a whine of higher pitch, the plane, like a hound scenting the quarry, set off on its new course.

To Trevelyan, their progress seemed incredibly slow. They seemed to hang suspended in space without appreciable movement. Below them their shadow, a black cross, drifted slowly across the sparkling mirror of the sea. Yet the patch of mist on the horizon grew in size and clearness until it was visible to the unaided eyes of Wainwright.

Closer and closer came the silvery mist, but still it remained as elusive as before. At times it seemed to move, as if streamers of vapor weaved through its substance. The faintest of colors played through it like the iridescence of a smear of oil. Yet always the water showed through, a lighter greenish shade than the surrounding blue.

Trevelyan signaled with a gesture and the plane began to descend. Around the strange vapor it swept, until it barely cleared the tops of the waves. Viewed horizontally, the mysterious mist no longer baffled comprehension, for the tangled mass of writhing tentacles that reached skyward were now visible.

It was a *Hydra*! Monstrous, evil, the thing crawled upon the surface, reaching upward for prey, sensing the approach of man, stretching with all its horrid tentacles for the hapless victim that might venture within its reach. Its hideous arms, thick and powerful at the base, seemed to tower to enormous heights, their limit vague and uncertain because of the increasing transparency toward the tips.

Trevelyan, overcoming the nausea that assailed him again at the recollection of his encounter with the smaller creature in the laboratory, signaled once more to Wainwright. In spite of the horror which almost unsewed the three men, they prepared to put into execution their preconcerted plan.

The plane turned and began a long glide toward the *Hydra*. They did not dare to fly too low for fear of the waving tentacles, yet for the success of their plan they must be low enough to strike with accuracy. Trevelyan glanced back at the red and white checked buoys which hung like bombs under the lower wings. To each buoy was fastened a harpoon by means of a short length of chain.

The plane's speed was terrific as they approached the monster. With throttle wide open, it dived. Down it roared toward the squirming mass. Trevelyan pulled the left bomb release control. One-half the harpoons dropped. They sailed through the air like arrows, the buoys trailing behind. Straight into the center of the creature they plunged. Trevelyan, looking over the side, was stunned by the blow of one of the whip-like tentacles. He heard the thumps and shocks of others striking on the hull and wings.

Wainwright drew back the stick, and the plane rose sharply. Even as it climbed, the motor missed. Stuttering, coughing, the engine labored to pull the plane

up the steep climb. Wainwright leveled off again, and the strain relieved, the motor resumed its steady rhythm. The scientist glanced back with curiosity. The missing engine did not alarm him, but to Trevelyan it foreshadowed the failure of their plan. He saw Wainwright's face white and set as he moved the stick for a flipper turn.

Again they headed for the Hydra. Trevelyan, waiting for the instant to release the remaining harpoons, saw the tentacles lashing the sea in fury as the Hydra strove to escape from the stinging barbs. The red and white buoys showed clearly against the greenish tinge of its flesh. At any instant it might attempt to escape by submerging. The buoys would prevent it, if Trevelyan's estimate of the animal's feeble swimming ability was correct.

This time they dived lower. There were fewer upraised tentacles. The wind of their passage pressed against Trevelyan's head as he leaned over the side. The noise of wind and motor rose to a howl in that deafening instant when he pulled the other release control. The remaining harpoons plunged downward.

Wainwright jerked the stick back. The motor stuttered again, and then started firing. The shriek of the wind fell away to a low-pitched whine as the plane rose. A violent shock went through it. It wavered. A gaping hole revealed the framework of one wing. They had struck another of the waving arms!

Wainwright eased the strain on the motor, and again it fired, but erratically, in a series of staccato barks. Now they had scarcely flying speed. He put the ship into a spiral.

Trevelyan looked again at the Hydra. It was using its tentacles in an attempt to swim, to escape from the strange bird that stung it from the air. The central part of its body was below the surface, pulling on the buoys which bobbed and ducked in the foam. While the harpoons held, their plan had a chance of success. But with a failing motor—Trevelyan dismissed the thought from his mind, and reached for the gas valves. From the pipes poured a dense white cloud of smoke that trailed behind the plane and slowly sank to the water in a white curtain. As it cooled, it sank more swiftly, but the plane barely kept above the poisonous fog-bank. On each turn it lost altitude, and came closer to the deadly phosphorus gas!

Wainwright strove to make the descent as gradual as possible. In his efforts to maintain altitude, he kept the plane at the verge of stalling. The gas had hidden the Hydra from their view. Below them hung a solid white bank of clouds. Trevelyan watched the gas valves anxiously. If the engine would only hold out! Its firing became more steady. They were getting close to the cloud of poisonous gas. Wainwright pulled back gently on the stick, feeling the plane's effort. It was like a doctor's delicate touch on a sick man's pulse. The plane held its altitude on one turn. The motor seemed to gain in strength. He pulled back a little more on the stick. They climbed.

They were widening the gap between themselves and the poison gas. Slowly they rose, while the tanks continued to pour out the phosphorus. In another min-

ute, Trevelyan guessed, they would have emptied the gas tanks of their poison. He watched the pipes from which the gas poured. The stream was thinner, less opaque than before. Without warning, the motor stopped dead!

The abrupt silence was appalling; more terrifying than any sound. The plane, a solid support the instant before, turned into a slipping, wavering thing, a wisp, too frail to hold them in that sea of air. Trevelyan clutched at the side of the plane. Sky and sea whirled in a mad spin before his eyes. The nose of the plane pointed to a white spot—the phosphorus cloud that covered the Hydra. He looked at Wainwright's hand. It grasped the stick firmly. He was letting the plane get up speed before attempting to pull it out of the spin.

The white curtain closed about them. A strangling, sickish cloud enveloped the plane. Trevelyan held his breath until his pulse hammered in his ears and iron hands clutched at his chest. His eyes, smarting with the gas, were fixed on Wainwright's hand. He saw it move back. The bottom of the plane pressed up against his feet, and a lead weight seemed to bear upon the back of his head. The plane had become a solid thing again.

Abruptly they swept out of the gas into the sunshine. Trevelyan breathed deep of the clear air; he tore off his goggles and dashed his hand across his eyes. They were skimming the crests of the waves, porpoising in long leaps from the tops of the rollers. Wainwright lay back in his seat without moving. He had pulled the plane out of its spin just before being overcome by the gas, and the machine had landed itself unaided.

In the noise, the scientist—looking unperturbed as usual—was attempting to scoop up water with his hat. Wainwright opened his eyes and looked inquiringly at Trevelyan. The latter glanced back. Behind them was the dense bank of poison gas. Under that cloud, unseen by the three men, writhed the Hydra; but more and more feebly, as the phosphorus burned deep into the nauseous flesh!

ALEXANDER shook hands warmly with Trevelyan as he rose to go. He glanced toward the central tank in the laboratory. The wooden cover had been removed. On the bottom lay a lifeless mass of whitish coils, and there was an odor of phosphorus in the air. "Your method was a success, I think. However, I shall watch it for some time to be sure there is no life left in it."

The scientist's face showed his regret at the destruction of his creation.

"Have you decided to discontinue your experiments?" inquired Trevelyan.

Alexander looked astonished. "Discontinue them? Why, of course not! Even I have no right to do that. The work of science must go on. But you need have no further fears on that score. This tank shall be the lethal chamber for every bit of tissue grown in my laboratory."

Trevelyan nodded. "By the way, Wainwright doesn't know anything about the origin of the Hydra.

He thinks it was a huge squid or octopus. I don't see the necessity for letting him or anyone else know any more than that."

He smiled, and added, "Your knowledge of marine life has been invaluable to us. We should never have suspected a molluse if you hadn't suggested the idea to us."

The breeze blew softly in Trevelyan's face as he

approached the beach. Several boats were putting out, and old Picar stood watching them. To Trevelyan he said:

"Sea safe again for feesherman, no?"

"Why do you think so?" asked Trevelyan.

The old man spread his hands deprecatingly, but made no reply.

Then he shuffled away over the pebbles.

THE END

The Mongolians' Ray

By Volney G. Mathison

(Continued from page 263)

a hole in his breast-plate. It all happened in a minute.

When Samuel Jones came to, he found himself propped with pillows on a big musty leather sofa, up in the reception room of the old mansion. Audrey Valois was sitting beside him, gripping him around the neck, and pressing an aromatic-smelling sponge to his face.

"Ahum!" he spluttered, feebly sitting up. "I thought th' Mongolians' ray had struck us. Where's that armored bird?"

"He has been taken to a hospital, badly injured," replied Audrey Valois. "My men all had gas-sponges, foreseeing something of this sort, while Stressmann had one also, in his helmet. The gas is only a quick-acting anaesthetic. To-day is the third time, Stressmann manipulated his radium hoax, in my presence. The effects were produced with Tesla currents, Geissler tubes, and cheap gases, together with a scoopful of flashlight magnesium mixed with guncotton. His entire switchboard is balanced on invisible knife-edge bearings; so that when anybody barely touches any part of the board, the 'radium explosion' instantly occurs. The amount of radium he pretended to have lost depended on the pocketbook of the come-on and his temperament. The man before you, a multimillionaire Florida real estate shark, wrote a check for \$35,000.

"Doctor Von der Vogel is a myth. During the last two years, that story of his violent death has been printed, time after time, always in a different paper, and always in a small, inconspicuous paragraph. It has appeared successively in New York, Baltimore, Philadelphia, Boston, and then back in New York, and

so on. In each case, a half-drunken pine-scrub reporter got a hundred dollars to turn in the story, without knowing what it was all about; and it was so brief it never got much attention from the busy city editors.

"Stressmann himself, in disguise, would get the paper into the coat pocket of his victim, after having first inked it with such threats as he judged would best work upon the temper of his come-on. This Von der Vogel killing threw color over his story; while his suit of armor was spectacular.

"Radium Harry is an extraordinary criminal. He is an insane radio-engineer; and in his crooked, maniacal brain, he more than half believes in his bulbs and rays. This only intensified his stupendous cunning. He actually did come to Washington, to interview the Attorney-General. After a preliminary investigation by the Department of Justice, I was put on his case; and a previous woman accomplice of his was kidnapped, by my instructions, and held in jail, enabling me to work myself into her place."

About this time, both Samuel Jones and Audrey Valois became aware that there was still an arm around his neck. Its blonde owner drew it away.

"Ahum!" said Samuel Jones, feeling more and more revived. "Has everybody left with the prisoner?"

"Yes. He and all his apparatus have been carried away on the motor truck that followed us out. My roadster is still outside—and on the way back to town there is a big jazz-tavern, where folks can eat and dance. I'm getting hungry."

"Well, I think I could take a cup of coffee now myself—an' that ain't no bunk!" said Samuel Jones.

THE END

CLOUDS of DEATH

By *Louis Buswell*



IS mother must have been inspired with a vision of the future when she insisted on naming him Icarus Wright Langley. She had her wish but her husband, as he lovingly patted her hand, gently chided her for being so sentimental:

"Mary, darling! How can any child carry a handle like that?"

At school he was nicknamed "Moody Ike." He never cared to mix with the boys at any of the pleasure functions. For sports he cared not at all. His greatest pleasure, in fact his only pleasure, were the strolls alone, sometimes with a book under his arm, but generally with arms swinging freely.

Only once did we try to penetrate his reserve. That was Ladies' Night, when we were entertaining the co-eds from a neighboring college. We decided that Icarus needed a girl to liven him up. We got the girl and then started out to find the victim. Finally we found him in one corner of the campus lying on his back, apparently asleep. He never moved till we came right up to him. Then he held up his hand motioning us away. But we were not to be denied. He sprang to his feet and faced us. With one exception, I have never seen a face so full of animation, the red rays of the setting sun lighting it up like red gold. Only once again have I seen such a face, and yet, though the events were separated by years, I remember one as distinctly as the other.

"Honestly fellows, you've spoiled it," he exclaimed, much perturbed, "and I have just solved it, too."

"Solved what?" we laughed in chorus. "Look, girls—see the thinker."

"There! Can't you see? That's it up there," he cried. There was nothing up there but the big hawk whirling in endless circles. But how different was it another time when I gazed aloft because of Icarus Wright Langley.

Eventually, graduation days came and eventually, as we all thought he would, Icarus carried off first honors. He was a regular bear at physics. And talk about math! He could shine like the sun, too, in chemistry, but history and economics, he didn't care a fig for either. Finally came the hand-shakings and good-byes, some of us parting never to meet again, we thought. But Icarus and I did meet again—years afterwards.

How we met—but that is getting ahead of my story.

A little match under right conditions will set fire to a city. The world never quite recovered from the disaster started by the killing of the Archduke Francis Ferdinand at Sarajevo. The world was still sick. The surgical operation of a world war had not eradicated the cancer; just another irritation in the Balkans and all Europe was in flames again—flames which spread with lightning swiftness over Asia and Africa. America, for once, showed good judgment and stayed in her own back yard. The belligerents impoverished themselves; America profited, so that at the close of the war she had control of the world's finances. Debtors generally hate their creditors. As the world's creditor, America was no exception.

President Keller called a peace conference to study the time-worn question, "Limitation of Armaments." The conference was proceeding nicely with its business, when the storm broke.

The third and greatest World War started simultaneously at first by angry mutterings of peasant and laboring classes in different countries, at the squandering of money by American tourists and globe trotters. The mutterings, however, did not amount to much. The lull before the storm never amounts to much. It merely creates a false sense of security.

The hurricane arose. The tidal wave swept in from four sides. Huge airplanes swarmed, like angry hawks, and roared over the borders. Teeming crowds in cities, Washington, New York, from Bangor to Pensacola, smothered under clouds of new and deadly gas. Nor did the Pacific Coast go unscathed. From the Pacific to the Sierras, Seattle to San Diego, the country became a raging inferno. To destroy was the order of the day; the hated nation was to be punished and humbled.

America fought. The spirit of resistance born at Concord and Lexington was not dead. But it was the resistance of the mouse against the cat. Secure in her wealth, she had not expected or even dreamed that "Attila and his Huns" would again sweep westward. Her airplanes were the largest and fastest in the world. But they were as useless as toys. The directional death rays killed motors. The invaders did not ask submission. Cats never seek a parley with mice. Why

ONE of the most efficient flying machines ever designed, no doubt, is a bird. Their efficiency in flying is much greater than we can attain with our present cumbersome motors and still more cumbersome propellers.

Birds and insects fly by rhythmically beating the air with their wings. While flapping bird-like machines have been constructed in the past, no satisfactory machine along these lines has ever been designed. It is certain, however, that an airplane built along these lines will make its appearance sooner or later.

"Clouds of Death" is interesting from this viewpoint, and gives considerable insight into future warfare.



As I watched, one of the birds dropped from the flock and began to settle toward the earth... Soon it was close enough to the ground for the wing flapping to be distinctly seen with the unaided eye. The closer it came, the more convinced was I that it was not a bird.

should they? What they wanted, they could take and they could take it when they wanted it.

I was on the staff of General Loper, who, from his headquarters at Denver, was quite busy gathering and holding together the remnants of a shattered nation. He cursed first the invaders and then the invaded. His requests for parley were answered with the derisive—"What is the hurry, General?" But the frantic appeals of the Americans for relief nearly drove him insane. "Make peace at any price."

Since gasoline motors were useless, the resistance had reverted to guerrilla warfare as in the days of Marion, "The Swamp Fox" in '76, but it was only the resistance of despair.

The Death Clouds

THE Pacific Headquarters of the enemy was in Boise. And now a change was at hand. The victors, in their turn, were over-confident. All day the wind had been blowing ragged clouds northward toward the Pacific.

Suddenly a bomb fell and buried itself in the ground in front of the Capitol, the force of concussion breaking it open and sending out a white powder. The curious crowd which collected immediately the shell was pronounced harmless, were excitedly conjecturing where it could have come from, when the news was broadcast that the entire city had been bombed with the mysterious shells. What did it mean and where had they come from? The Americans, they well knew, had no airplanes, neither had they any large guns. Not a sound overhead; nothing in sight but rolling, floating masses of clouds.

The terrific explosion of a bomb which landed squarely on the Capitol put an end to all discussion. The Capitol was a mass of flames which spread rapidly. Widely scattered and increasingly violent detonations shook the city from end to end. Consternation and confusion reigned. A bomb no sooner struck and exploded than flames began to spread with frightful rapidity. The flames were more terrible than an oil fire. Water not only spread and scattered the flames, but actually increased their violence and intensity. Boise had to be evacuated at once. The city was a smoking, roaring hell, a Gomorrah.

A FEW days after Boise, as I was going into the building occupied by General Loper, the sentry at the door as he saluted me, said: "Sir! A most remarkable cloud!"

Following his glance, I looked upward. What appeared to be a cloud rolling and changing formation in a violent wind, attracted my attention. It certainly was a most remarkable cloud. It rolled and tumbled, and yet, for some inexplicable reason it seemed to stay in one position. How could that be? Evidently the wind up there must be blowing a gale; otherwise, why would the clouds roll so. By this time quite a crowd was looking at it. I have never been able to understand why we did not think that cloud just some device of the enemy and scurry to cover.

General Loper, attracted by the commotion, was ex-

amining the cloud through a pair of binoculars:—

"Gad! James," he exclaimed. "That's not a cloud; it's birds! Could it be airplanes? But who ever saw airplanes with flapping wings?"

"Birds? Airplanes? What do you mean, Sir?" I asked.

"Just that," returned the general. "Here take the glass."

Through the powerful glasses the scene was entirely changed. I saw what appeared to be a flock of huge blue birds marked with splotches of white. Great wings flapped in unison and with a graceful motion. And such circles, they were turning in their own wing spread!

As I watched, one of the birds dropped from the flock and began to settle toward the earth. Down! Down! Gently, as I have seen pigeons settle on the roof of our barn, with wings thrown back and beating the air rapidly. Soon it was close enough to the ground for the wing flapping to be distinctly seen with the unaided eye. The closer it came, the more convinced was I that it was not a bird; that it was an airplane; but what a wonderful machine!

A soldier started to shoot at it but the general stopped him. "Don't do that! Whatever it is, it must be friendly. God knows any harm it might do to us would not increase our misery!"

It was an airplane and a most extraordinary one at that. When it was some twenty-five feet from the ground, the wing-beats ceased; for a fraction of a second, the machine dipped, then as we watched breathlessly, just as it touched the ground, the wings levelled-up, began to beat the air and the machine darted off. The wing motion now was different; it was up and down, but now I noticed the wings were jointed, the outer portion moving backwards at the completion of the downward stroke and forwards at the completion of the upward stroke, so that the wing-tips moved through an ellipse. The machine spiralled gracefully upward. Then cold paralyzing fear gripped my heart, as the machine with a swoop, darted directly towards us. But with a movement so quick as to be nearly imperceptible to the eye, the trailing edge of the wings tilted downward, the wings beat the air violently, the tail tilted upward and the machine stopped abruptly, as if it had reached the end of a rope. It then settled gently to the ground in front of the general. It does not take long to tell what occurred, but the great events happened much more quickly than I could tell about them, and the most remarkable part of the entire occurrence, to me, was the absence of all noise, except the flapping of the wings.

A door in the side of the fuselage, underneath the right wing, opened and out stepped a pale, angular man about thirty-five years old. His face looked familiar to me. I had seen that man before. But where? As he gazed first at me and then at the general, as if wondering whom to address, the earnestness of his expression stirred my imagination. Ah! That was it! That was the way Icarus looked at us when we took the girl to him to liven him up.

"Who are you?" asked General Loper.

"Are you General Loper?" inquired the newcomer in a matter-of-fact tone; and without waiting for reply, he continued:

"I am Icarus Wright Langley. General you will have to help me now. I started them on the run at Boise and Chicago, but I can't finish it alone."

"Help you!" exploded the general. "Why man, in the name of God, tell me how! I have been nearly crazy thinking how I could help this distracted country retain its fast ebbing life. Say the word. What do you want? If you had anything to do with Chicago or Boise, you certainly gave them a scare. We will help with the big push if you will only tell us how."

Icarus stated his needs. He wanted the remaining resources of the country utilized in building a flock of blue birds, *Jeanne d'Arcs* as he called them. As he expressed it, *Jeanne d'Arc* on her snow white charger saved a nation, why could not her spirit in a blue and white bird save a world which was fast falling into savagery! Let the Warrior Maid lead; we would follow to death!

It is better to let Icarus tell his story. However, before I start the narrative, I must ask the reader's consideration for errors, as the time was a very exciting one and I was never a good hand at remembering details.

The following is as near as I can remember it.

"**A**FTER leaving college, I settled down in the mountains of northern Nevada. Tuscarora, at one time the center of a large mining industry and a city of more than 30,000 people, attracted me. The mines, however, had long been closed, nearly all the people gone; in fact, the population of the place when I arrived, was probably nearer to thirty than thirty thousand.

"But to make a long story short, Tuscarora was just the place I wanted. I could make my scientific experiments in peace. While my last name is 'Langley' the late Professor was not a relative of my family. However, I greatly admire his achievements and have endeavored to emulate him. Knowing how he suffered for his apparent mistakes, I sought a place where I would be free from the jeerings of an incredulous world.

"Like Professor Langley, my favorite problem has always been aerial navigation. I was not satisfied with the dirigible, and the airplane with its whirling propeller seemed wrong. I wanted a machine to fly like a bird. I reasoned that it was impossible to develop the full horse power of the engine through a small rapidly revolving propeller; also that if the propeller was as large as the machine, like the bird in using its wings, only a minimum of power would be necessary for propulsion. Why should an airplane need so much power in its engine to function, when for example an old wobbling goose, which can hardly walk on the ground, can fly so rapidly and with such an apparent ease in the air? Such were my theories and problems.

"But the way of the inventor is hard; his path is blocked by obstacles. My first plans, on paper, appeared to be perfect. In theory they were so, but in

practice they would not work. The principles were correct but the driving mechanism would not function properly. I became a bundle of nerves. Thoughts of the machine gave me no rest. After vainly trying to correct the mechanism, I gave up the problem and redesigned the entire machine. The second model was entirely successful. So successful was the machine, in fact, that it can be propelled by pedals—requiring about the same energy needed to ride a bicycle. For long distance flights, we cut-in a small motor which is equipped with a muffler. If the machine has a sufficient elevation, so that the flapping of wings cannot be heard, the machine is noiseless.

"Elated at my success, I determined to give the machine to the world. To properly introduce it, I thought about two hundred would be needed. It was my belief, that if the machines were as popular and universally used as the automobile, especially by women and children, the ease of inter-communication would build up such a spirit of friendship that war would be impossible. But how vain were my hopes! I no sooner had collected the material for two hundred machines than this cursed war broke out. But to save my country, I would use the machine as a weapon.

"I had selected the two hundred pilots and they were all at Tuscarora, learning how to operate the *Jeanne d'Arc* when hell broke loose. The news of each outrage impelled us to more feverish haste. Probably you wonder why we were not disturbed.

"Nevada, thank God, is sparsely settled. Those devils didn't care about bombing the desert when they could bomb women and children in cities. They would rather turn—"

"**B**UT," interrupted the general, "how about the burning of Boise and Chicago? Tell us about that."

"Some of the pilots were mineralogists. In their search through the mountains for different chemicals and minerals, they were fortunate enough to find a deposit of sodium carbonate. It was certainly a lucky find and right in line with our plan.

"We worked the deposit through a process of heating and reduced its base to pure metallic sodium, which was next incased in shells of thin brass. We didn't lack for machinery or rough material. When the mines were abandoned, vast quantities of rough material, also thousands of dollars worth of machinery, were left on the ground.

"Our next step was to prepare bombs of smokeless powder and thermite. With all material on hand for two raids, we went through intensive training. Having maps of the principal cities, we marked out in scale on the ground, the outlines of the two objectives. We knew that if the raid was to be a success, it would have to be accomplished quickly, so we practiced above the outlines, drilling so that each man would have a certain amount of territory to cover and know his place in formation.

"Boise being a small city, it was not necessary to load the machines very heavily and the program was carried out to perfection. We first gave them a good

dose of sodium. That interested them a little, so we gave generously of the thermite. The thermite started the fire-works. When they turned the water on, the sodium was the life of the party. You know water and sodium are not friendly toward each other. After serving Boise, we prepared for Chicago. The machines were so heavily loaded, we could hardly get them off the ground. It was necessary to wait till the wind was in the right direction and use the motors. That is about all.

"If we can get together a flock of a thousand machines, we can dictate terms. There is plenty of space in these mountains where we can work undisturbed. Will you help?"

The readers know the rest; how the general kept

his word; how the resources of the nation were turned to the purpose of Icarus. Who doesn't know of it? Who has forgotten how, like swarms of angry kingbirds, the blue *Jeanne d'Arcs* swarmed out of the mountains, scattered to the winds, and struck dismay into the hearts of the enemy? Who has forgotten how thrilled we were, when the enemy from their burning encampments, begged for terms? Peace!

In the new era Icarus is to see his wish fulfilled. Nearly every man, woman, and child has a *Jeanne d'Arc*. The ease of communication which the use of the "Blue Birds" affords is rapidly softening the memory of the war. It is universally believed the war would have been avoided, had the *Jeanne d'Arc* been in existence prior to the actual breaking out of hostilities.

THE END



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25¢ to cover time and postage is required.

A SUGGESTION FOR A SUBJECT FOR STORIES

Editor, AMAZING STORIES

I am buying your magazine locally from a Chinese dealer. Surely, I have found many of the stories quite interesting. They contain many new ideas. For instance, the story "Skylark of Space," wherein the atomic force is used, can be considered as perfect from the chemical viewpoint. According to my opinion, there is likewise another fact for stories to note your readers have been telling about interplanetary communications; that they traveled through space with a rapidity of light centuries in one second (though this is rather impossible if we take into consideration the theory of relativity). They traveled through the Macrocossos.

We have another field for our phantasy; a field which is at present being studied carefully, and which is the field of sound and delicate for our instruments. It is a field which is nearer to us than anything else. This is a reproduction of the Macrocossos—the Microcosmos. Size is relative in this world. According to many investigations the planets (electrons) of the microcosmical solar systems (atoms) are subordinated to the same laws as our own solar system. Several years ago I formed for myself the following question: Why should not the atomic worlds and universes not be inhabited? Is it not possible that we are ourselves with our earth an electron of the atom which we call Sun? There exists still a doubt as to the real existence of the atoms. Nobody has seen them, many people would say. It is not true. Atoms and electrons have been seen. They have been photographed, and surely you have seen the photographs of single atoms and electrons. Though they are very small, their rapidity helps us to see them reproduced on the photographic-plate.

I think this is a rather good field for writing a story. I personally do not know the English language very well; otherwise I would try to write myself.

There are still other possibilities. As you know, there is practically no difference between Sound, Light, Electricity and Energy. All these are only different waves. There still exists an unknown space between sound and light, but the space be-

tween light and electricity has been filled pretty well. You are trying to have all the stories of your magazine upon scientific possibilities—well, there is a new field for such kind of scientificism. Perhaps a theory can be formed as to the cause of the waves, which seems to me to be most important. I admit that your stories are distributed in a very good way by means of digesting it in a layman's reading book about the new theories. But a reader will not find any interest in it, and he cannot understand. But if such parts of the modern science are reproduced in such way as you do it in your magazine, they are understood by everybody easily. Wouldn't it be good to give everybody easily the idea of the Atomic Theory and the QUARTERLYTHEORY?

D. Koush
1552 Avenue Joffre,
Shreveport, Louisiana

Here is a criticism, and a favorable one, from distant China. As regards speed in interplanetary travel, if we are cut out from the impossible speed and impossible acceleration, we do not know what would become of the interplanetary stories and it is precisely these stories which so many of our readers enjoy. We do not claim, and never have claimed, that all our own stories are nothing but solid fact. If we begin to write stories of interplanetary motion later into them, it must play a part, or else the magazine would degenerate into a series of dry-as-dust articles. We thoroughly agree with your point of view, but we do not agree with what you say about your English, which we considered good. Incidentally, if you thought "The Skylark of Space" interesting, want till you see its sequel. The author tells us it will forever restraining his imagination while writing this story because *Armstrong* was not yet in existence. His next story, he says, he will be uninhibited. We are looking forward to it eagerly.—Eserca.)

A READER WHO WANTS SHORT STORIES

Editor, AMAZING STORIES

I would like to see more short stories in the MONTHLY and the QUARTERLY. I think many of the tales you publish are unnecessarily long, being extended beyond the length required by the

plot or the theme; for no other reason that I can see than to increase the size of the author's check. This does not mean that I do not like novels. "The Moon Pool" is at once the longest and the best story that I have read in AMAZING STORIES. I object to the extension of a short story to novel length without a corresponding increase in the interest of the story. "The King of the Monkey Men," "The Man in the Moon," "Ten Miles to Reward," "The Golden Girl of Munsen," and "Armageddon—2419," are some of the worst offenders in this respect. Any of them would have had a much greater intensity of interest if the length had been reduced to half, and if a little attention had been paid to unity of impression and the creation of a single dramatic effect. The best short stories you have published have requirements set forth above. They include the stories of Miles J. Breuer; "The Colour Out of Space," "The People of the Pit," "The Malignant Flower," and most of the stories of H. G. Wells and Francis Flagg. I hope you follow Mr. Breuer's suggestion of publishing literary stories, perhaps offering occasional prizes for literary scientific stories, limited, say, to five thousand words.

JACK WILLIAMSON,
East Star Route,
Elida, New Mex.

(Our general idea in AMAZING STORIES has been to have the MONTHLY devoted to the shorter stories, and to give a long one, almost of novel length, in the QUARTERLY, with others.

We are interested in what our readers and authors think of our make-up and you will notice that we are trying out our suggestion somewhat with this number. We will hear what the rest will say about it.

You name a number of stories as being too long, but we can assure you that a story cut down from its original length is apt to be a definite failure.

As regards literary stories, the Magazine is published monthly, and is intended to be a scientific publication, and the conception of a magazine which would give science in all its stories was a very original and as it has proved, a very successful idea.—EDITOR.)

(Continued on page 278)

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A PLEASANT LETTER FROM ONE OF THE FAIR SEX; HER CORRESPONDENCE WITH BOMBAY

Editor, AMAZING STORIES:
You may call the story, "Mernos," an extraganza, but it hit just the right spot with me. It is my ideal of what a world, perfected in science, should be.

Most interplanetary stories drag in horrid creatures of different colors, which do not appeal to our aesthetic sense. But to see man, and our world beautified gives us hope for the future. I believe that world-perfection is the ideal of every one.

The screamingly funny part of "Mernos," was where the professor went to the tube and "inhaled a good breakfast."

It may interest you to know that I am in correspondence with your subscriber from Bombay, India. He is a doctor. Amazing Stories is the scientist in me. I also wrote to a man in England who asked for letters, but received no answer. He probably thinks that a woman can't discuss the progress of science. Whatever he thinks, he is missing the pleasure of a transoceanic correspondence that would help to brighten his life. I am interested in all branches of science, and follow eagerly anything new that comes along.

AMAZING Stories is my only magazine, as I can take both it and its sister. So I take the combination of science and romance. It fills my yearning for both knowledge, and dreams of the unknown.

Four people who formerly scorned my reading of trash, (AMAZING STORIES) are now avid readers themselves. If I didn't wear such short sleeves, I'd have a good laugh.

All success to your efforts.

Mrs. EMMIE PLEASER,
1617 Madison Street,
Maywood, Illinois.

(We are very glad to see that you have opened correspondence with our Bombay subscriber. We are very sure that it will be enjoyable for both sides. It seems quite attractive to be in touch with a fellow spirit some 140 degrees of longitude away from us.

We are sure that your English subscriber, in neglecting to correspond with you, has lost much pleasure.

As regards the horrid creatures in the planetary stories, it might be that the inhabitants of other worlds would not be as repulsive. Our idea of what is beautiful and aesthetic because of what we are and have become thoroughly imbued with for many generations, might be decidedly repulsive to possible inhabitants of other planets.

We thank you sincerely for your appreciation of our efforts.—Editor.)

A LOT OF KIND COMMENDATION

Editor, AMAZING STORIES:

Just a few lines to show how much I appreciate your wonderful magazine AMAZING STORIES. It sure is an amazing stories, the kind of stories I enjoy reading.

I don't see why so many readers kick about the cover and illustrations of your magazine. It was the cover of the September 1926, picturing a huge lizard-like animal living at the bottom of the deep sea in the story "In the Abyss," that made me buy my first AMAZING STORIES.

I have seen many many people find fault with your stories for a magazine can't be perfect. There's no such animal as a perfect magazine and AMAZING STORIES is better than the average. In a recent issue I liked "The Skylark of Space" and "Armageddon—2419 A.D."

Please give us more interplanetary stories and stories dealing with the fourth dimension, also stories about occult science and about future times. The poems by Leland S. Copeland are very good. This is the very imaginative person.

The author I like best is A. Hyatt Verrill, H. H. Wells, Hugo Gernsback, E. E. Smith, C. E. White, Francis Flagg, A. Merritt, Philip F. Nowlan and Jules Verne.

I think if there are three good stories in the magazine, it is worth the quarter I pay for it. I know you can't possibly please everyone no matter how you try.

CHARLES BIRD, JR.
815 Melville Avenue,
Detroit, Michigan.

(We think that you will usually find more than three good stories in an issue. Do not mind the faultfinders. It is excellent mental discipline to have our work checked periodically and we are greatly surprised that we get off so lightly, for we certainly realize our own shortcomings.—Editor.)

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A TRAVELER REPORTS WHERE AMAZING STORIES WERE BOUGHT

Editor, AMAZING STORIES:

I have just finished reading the September issue of AMAZING STORIES, and still maintain my record of not having missed an issue since the original first issue. Through the years while AMAZING STORIES has truly grown, amazingly, it has been my one magazine pal; North, South, East and West alike. I first saw your magazine at a friend's house in Providence, R. I.—then I was so "bet up" over this new and unrivaled magazine, that I got the next three numbers in Rhode Island, and continued on to Connecticut. The next summer I moved to New Haven, Conn., to New Orleans, La., and then to Houston, Texas. Issue after issue found me in various parts of the country, but they always found me or I found them. Once again in Little Rhody I got the September issue and here I am.

I have been called several uncomplimentary (very) names for being such a devoted reader, but upon insisting that they prove their point, they usually said, "Let's take a look at it anyway—and if we get it, we'll give it over there (privately) and the local newsmonger has to order a few more to meet the demand." I am not going to ask a commission for this "campaign" of mine, but within two weeks in one Texan town I had the local demand of AMAZING STORIES jump from 0 to 1.

My mother was one of the severest critics in my choice of "uplifting literature," but one night at the table I was telling a friend of mine about "The Camel Down" and "The Man from Mars" and the Mrs. pricked up her ears, and asked where I had gotten all that information. Triumphantly I told her that it was obtained from no other source than that "uplifting literature" she scoffed at. She said she would have to start reading, and she, being a devout reader of Edgar Rice Burroughs, I started her on Mars and the Mind of Man, which my opinion is about the best story I've ever read, and I've read widely. That one surpasses even Burroughs, former stories (in book form) of his Martian Creations and the Phoenician character of his John Carter.

Critics should come next, and usually your critics start with No. 1 and tear apart every piece of the magazine regardless of the hard work of the Editors to please them—but such is life. Personally, I am not going to criticize, for the very simple reason that I have no criticisms to make. Absolutely none.

If I may, I should like to add another wreath to now swelling pile of Mr. Paul, your artist. Mr. Paul is unusually adept at picturing the things "as is," and that alone is a point many artists never attain.

I shall look forward to more of Merritt's stories—and tell E. R. Burroughs (if he still survives) to go to Mars and get some more "dope" on the immortal John Carter.

RAY E. WARREN, Jr.,
14 Bank St., Pawtucket, R. I.

Our much traveled correspondent has certainly followed the trend of the States, and is now in the middle. He is very encouraging to the editors who are working for the success of what is felt to be a very interesting magazine. We receive many letters from those who are really friends of our publication. Incidentally, our correspondent on the top of his first pages gives a list of eighteen different cities where he found AMAZING STORIES. A reader of this, we find a partner in our work. E. R. Burroughs is still very much alive. We too, hope to hear some more on John Carter in Mars soon. We expect to hear more from A. Merritt in the near future also.—Estes.

A MOST AMUSING LETTER FROM A GOOD FRIEND

Editor, AMAZING STORIES:

Oh! I'm all right. It's the world that's wrong. . . . Some of your readers' intellectual contributions to "Discussions" are really amazing. . . . The covers seem to be nerve-shattering—the colors smoldering in the dark—"Well! Well! Well!"—the illustrations unashamed—the blinding weak—the embossed rotene-paper cheap—two typographical errors in the last issue—a misspelled word here—the magazine, as a whole, degenerating—and of course the authors don't know anything about anything. . . . Yes, it is all very amazing, but soon becomes monotonous.

Listen, my "well-meaning" locomotives! AMAZING STORIES has a fairly circuitous circulation and any attempt to change its title, cover, or contents would, I venture to say, bring negative results. . . . "Scientification" is too hard to say and is not peggy. . . . Anyway, the stories are amazing and the covers portray exactly what is inside, contrary to some

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Avgation is leaping ahead with giant strides and, as usual, SCIENCE AND INVENTION Magazine is right in the front line and keeping abreast of the times. The aviation articles in this journal are edited under the able direction of Mr. Augustus Post, one of the foremost aeronautical experts in the world.

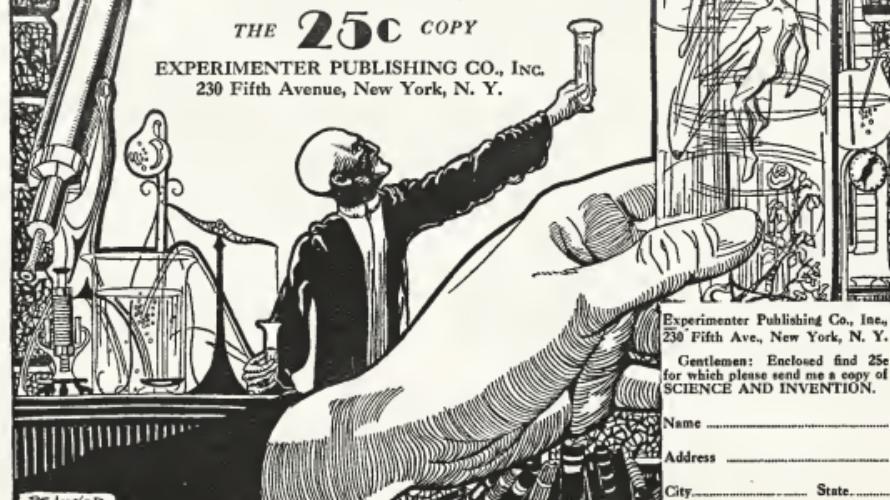
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Among the other valuable articles in the June issue, we find: "When Inventors Take Winds"; "How Much Power to Start a Train?"; "written by a professor of railway engineering"; "Modern Speed Cars"; "Is Rocket Flying Possible?"; "How I Built Some Games"; "House Plans You Can Read"; "Making an Airbrush for Decorating Small Objects"; "Making Your Own Cement Walk"; "Magic"; by Dunninger; "Home Movies"; "Motor Hints"; "Experimental Chemistry"; "Wood Turning"; "Television"; "Building A High-Powered Electric Phonograph"; "Making an Exponential Horn."

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A SUGGESTION APPROPRIATE OF THE FOURTH DIMENSION. THE LORENZ-FITZGERALD CONTRACTION.

Editor, AMAZING STORIES:

It is only in the last few months that I have been reading AMAZING STORIES. And, though I can not concede much to some of the stories in the way of science, they certainly give one a thrill.

Regarding the "Discoveries of Dr. Mentisius," it is not against the laws of nature to travel to the past and perhaps to the future. But the time interval between the two events is not time faster than the Doctor went; and, even then, the recording of time by earth clocks would have no bearing whatsoever on the subject. One could not "come back in 1899" but he might be able to see events which took place at that time.

Time is a fourth dimension possessed by any body relative to any other body with respect to which it may be in motion. When a body moves relative to another, its dimension of time, the sense of motion, as viewed from the other, is decreased. And another dimension is increased—that of time. Under these conditions, simultaneousness is no longer absolute! From a body traveling, say with respect to the earth, two earth events which occur at the same time may not appear simultaneous. And this is even true if they are separated later. To get effects comparable to those claimed by the "Young Doctor" one would have to travel within but a minute fraction of the velocity of light, and this is, according to the latest experiment of Dr. Michaelson, 186,176 miles per second!—I can conceive of no one having the temerity to claim such a speed as this as yet, it does not come within the realm—ever of possibility.

It must be borne in mind that the facts I have given above—if facts they be—are not personal opinions; they are conclusions drawn, by someone else, from the Theory of Relativity.

FELIX B. WABEL,

Box 166, Tyler, Texas.

(We are very glad to receive a communication from one who calls himself a scientist. We have been some delay in publishing this letter which we consider very interesting. In giving your idea of relativity, which as you know is a rather abstract subject, we think your letter can speak for itself. The idea requires much comment. Our mail from our readers, regarding relativity and the Fourth Dimension are by no means always as interesting as yours.—Editor.)

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ABOUT THE SPACE GIVEN TO "DISCUSSIONS": THE VANGUARD OF VENUS, AND A SUGGESTION

In the attractive cut adorning the head of your "Discussions" column I notice that you have there, a number of bricks and flowers signifying the purpose of this department, therefore I am taking the liberty of knocking one of those bricks and hurling it at the editorial office of the home of "Scientific Fiction." My bricklet is concerning your "Discussions" column. I would like to say what you seem to think. The department is interesting but I believe that you have gone a bit too far with it in regard to space. In your September, 1928 issue you have devoted approximately 15 columns to this unnecessary feature. Those 15 columns cover five whole pages while some of your stories cover only that much space. Why not cut down on the discussions? I would like to see an average story in a page. Your bricklet (including yourself) buy AMAZING STORIES for Scientists and not needless clutter from persons who usually all disagree with one another in regard to their bouquets and bricklets. Enough is enough but too much is too much!

"Walter, bring forward the flowers!" I want to congratulate you on your excellent choice for first prize in your recent design contest. No better design could have been chosen, and I am sure that the majority of your readers will agree with me.

The idea of a science club is splendid, and I am eagerly awaiting news of its organization. I believe that such a club would not only be a pastime but really beneficial to its members. Count on me as a supporter!

One of the very best stories that I have ever had the pleasure of reading in connection with "Scientific Fiction" is "The Vanguard of Venus." I believe that this booklet idea can be worked out more fully. Why not publish some of your stories in such sizes, costing about ten cents per copy. One story to a booklet would soon give a wonderful library edition.

Your illustrations are best the way they are. If they were taken away, I believe that we readers would be missing something; if that were were added, less pages would be devoted to stories. Leave them as they are.

WALTER A. YANOWITZ,
Forest City, Penna.

(As regards the length of the space given to our "Discussions Column," many of our readers turn to these columns first of all. They are as much attracted by them as by the stories. The September number that you refer to, may have devoted more space to the "Discussions" than you approve of. We have a number of other columns that we receive and a small selection of which we publish, is such as to make most interesting reading. We consider that if we had more space at our disposal, we would be glad to publish more of the letters from our readers. Those who write are generally constant patrons of our efforts, and they do not write unless they have something to say. Just as many who write do not write because of the limitations of columns of "Discussions" and lots more short stories. We are anxious to hear what our readers think of this issue.

We feel that your suggestion for publishing bookslets is a very clever one, and we shall certainly keep it in mind.

Another thing we want to bring to your attention is that you haven't noticed it yourself, is that we are limiting ourselves very strictly to good, paid advertising only, beginning with the May issue—and incidentally, beginning with the new editorial and business management—which at the same time automatically limits the space available for discussions.

Because of several other changes, we will be able from now on, to choose only the best, both of stories and letters for discussion. We feel that the better the stories and the more science they contain, the more possible really interesting comments and worthwhile discussion becomes. With the help of our authors, of whose cooperation we have already been assured, and our readers from whom we have begun to receive letters, Amazing Stories will become a really unique and classic science-fiction magazine.

We now have on hand so many excellent stories written by our old friends and new friends, who will without a doubt soon find their niche in the heart of our readers, that it seems too bad to us that we can afford to eliminate more advertising, even though well paid, or increase the number of pages substantially.

However, we feel far from hopeless about such a change becoming possible sometime in the near future. And with the help of our readers, much can be done.

Naturally, we shall continue and welcome still encourage all constructive criticism, for after all, this is your magazine and we want to keep it powers. And we must know what you want!—Editor.)

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TOWNSEND LABORATORIES.

725 Townsend St., Chicago, Ill.

Please send me full information on the Townsend "B" Power and Free Trial Offer.

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BRONCHO BUSTER



MINER



MILKMAN



And now the builder of a \$2,500,000 theatre

Milkman! Miner! Broncho Buster! Orel R. Heinz had been all of these, but he was still a long way from the high-salaried class. So he decided to take up Civil Engineering.

Long before he finished his home-study course with the International Correspondence Schools he received dividends in the form of better jobs. Even before he secured his diploma, he was making \$150 a month as draftsman.

What's he doing now? Well, he's a full-fledged Civil Engineer, and lately served as Superintendent of Construction of the \$2,500,000 Chinese Theatre in Hollywood.

"Knowledge is of two kinds," says Mr. Heinz,

"practical and technical. And right here is where the I.C.S. student has a great advantage. He gets his theory while he is engaged in practical work. I. C. S. training, in connection with practical experience, will put any man on top with the best of them."

Why don't you study, as Mr. Heinz did, and prepare

yourself to deserve a better position and a larger salary? You can do it if you really try.

At least make the start by marking and mailing the coupon printed below and find out what the I. C. S. can do for you. It doesn't cost you a penny to ask for full details, but that one simple little act may change your entire life.

INTERNATIONAL CORRESPONDENCE SCHOOLS, Box 7141-E, Scranton, Penna.

"The Universal University" Without cost or obligation, please send me a copy of your booklet, "Who Wises and Why," and full particulars about the subject before which I have marked X in the list below:

BUSINESS TRAINING COURSES

- Bookkeeping
- Business Letter Writing
- Spanish
- French
- Advertising
- Business Correspondence
- Business Card and Sign Lettering
- G. F. & Coaching

- Biography and Typing
- Civil Service
- English
- English
- Mail Clerk
- Commercial Subjects
- High School Subjects
- Illustrating
- Cartooning

TECHNICAL AND INDUSTRIAL COURSES

- Electrical Engineering
- Electric Lighting
- Mechanical Engineering
- Mechanical Draftsmen
- Machine Shop Practices
- Draftsman Practices
- Drafting
- Civil Engineering

- Surveying and Measuring
- Mining
- Civil Engineering
- Architecture
- Architects' Blueprint
- Civil Engineering
- Architectural Draftsmen
- Concrete Builders

- Structural Engineering
- Plastering and Building
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Name..... Occupation..... State.....

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Persons residing in Canada should send this coupon to the International Correspondence Schools Canadian Limited, Montreal, Canada

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Achieved at last—the tube perfection for which the radio world has waited! Exhaustive research, a radically new engineering process, greatly advanced laboratory methods, a care in production and testing which has never been known before—from all these has been created an infinitely higher standard in tube quality, a standard which only Triad Tubes offer! Tests have proved their unparalleled clarity of tone, their longer life and their greater sensitivity and volume. ▲ ▲ Back of every Triad Tube is the personal guarantee of a group of pioneers in the radio industry, whose integrity and resourcefulness has been proved through years of intimate contact with both trade and public. ▲ ▲ Their product, the result of a conviction that better tubes could be manufactured, now makes possible a greater and more economical enjoyment of radio reception!



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“Quality ▲ Service ▲ Durability”

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TRIAD brings you a definite, well-planned policy of sales cooperation. Unequalled quality, a continuous supply, prompt deliveries, close factory contact—in short, every possible bit of assistance will be yours. A tremendous advertising, radio and publicity campaign has been launched that will make Triad the world's most popular tube. Tie-up material will be provided to each dealer in any quantity desired. And there is a generous profit margin with Triad—one that will bring real satisfaction to you with every sale. A greater tube business with greater profits is waiting for you in 1929 with Triad. Write or wire now for the special sales and merchandising proposition we have arranged for you!



The Triad Line—Complete!

A complete line of A. C. tubes is included in the Triad line—also D. C. types, Special Purpose tubes and Television and Photo Electric Cells. The Triad Line enables you to meet your customer's demand instantly—and Triad quality assures absolute satisfaction with every sale.

The TRIADORS will broadcast a popular program every week over a national network. This selling cooperation will mean a steady consumer demand for Triad Tubes.



Triad Publicity

Broadcasting: Fifty-two weeks of broadcasting over a national network, have been arranged. A famous orchestra, stars of the stage and concert world, elaborate presentations of varied nature—all these and many other features will sell Triad Tubes in the homes of every radio owner.

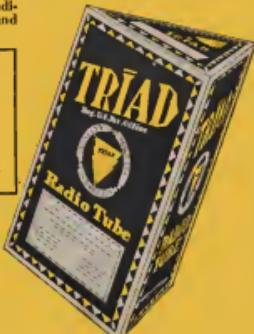
Newspapers and Magazines: An extensive national newspaper and magazine campaign will keep the Triad line constantly before the reading millions in 1929 and 1930. This powerful advertising, together with interesting publicity items will aid materially in building a steady consumer demand.

Dealer Helps: Attractive window strips, fliers and broadsides for counter or mailing purposes, plates and matrices for local advertising—these are only a few of the many merchandising helps available to every Triad dealer. Every possible aid will be extended in helping the individual dealer to tie up with the national newspaper and radio campaigns.

New! "Tube Insurance"

A certificate is enclosed with every Triad Tube, guaranteeing thoroughly satisfactory service. Here is a unique and valuable Triad merchandising feature! It means satisfaction to both customer and dealer—and a saving in the dealer's selling time and expense. Remember—only Triad offers "TUBE INSURANCE".

"The Tube in the Triangular Box"



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DEALER'S HELPS

TRIAD MANUFACTURING CO., Inc. ▲ PAWTUCKET, R. I.

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On the Bottom is the GUILD Book for May

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This illustration is a reproduction of a photograph of Commander Edward Ellsberg in a diving rig with an air drill rigged for underwater use.
(Description dictated by Commander Ellsberg)

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or

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Someone who answers this ad will receive, absolutely free, a fully equipped 7-Passenger, advanced Six Nash Sedan, or its full value in cash (\$2,000.00). We are also giving away a Dodge Sedan, a Brunswick Phonograph and many other valuable prizes—besides Hundreds of Dollars in Cash. This offer is open to anyone living in the U. S. A. outside of Chicago.



Solve This Puzzle

There are 7 cars in the circle. By drawing 3 straight lines you can put each one in a space by itself. It may mean winning a prize if you send me your answer right away.

\$750.00 for Promptness

In addition to the many valuable prizes and Hundreds of Dollars in Cash, we are also giving a Special Prize of \$750.00 in Cash for Promptness. First prize winner will receive \$2,750.00 in cash, or the Nash Sedan and \$750.00 in cash. In case of ties duplicate prizes will be awarded each one tying. Solve the puzzle right away and send me your answer together with your name and address plainly written. \$4,500.00 in prizes—EVERYBODY REWARDED.

John T. Adams, Mgr., Dept. A-106
323 S. Peoria St., Chicago, Ill.

Here is my answer to the puzzle.

My Name _____

Address _____

John T. Adams, Mgr.

Dept. A-106

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